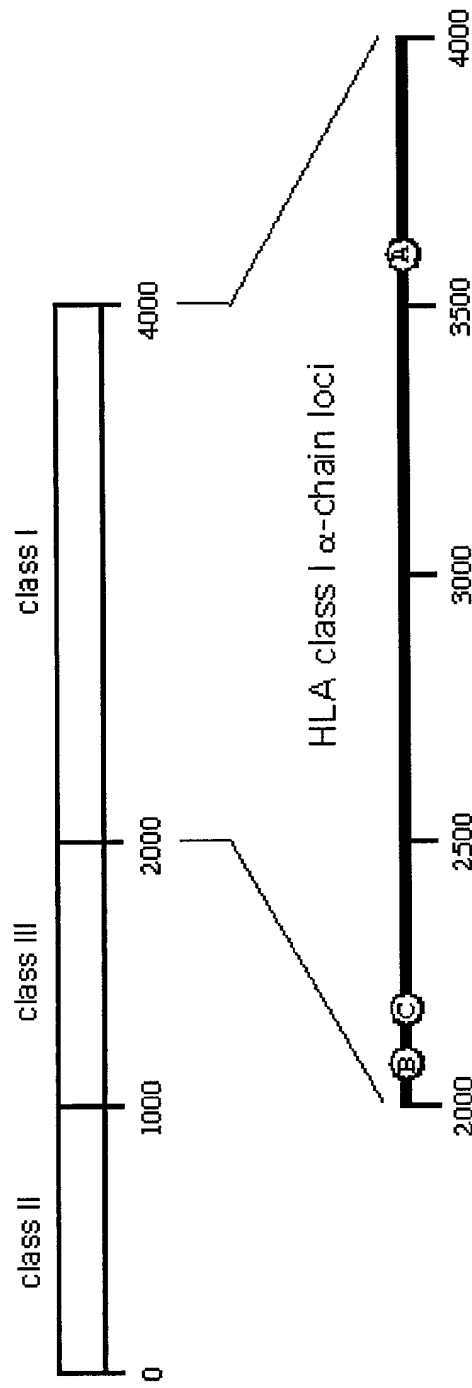
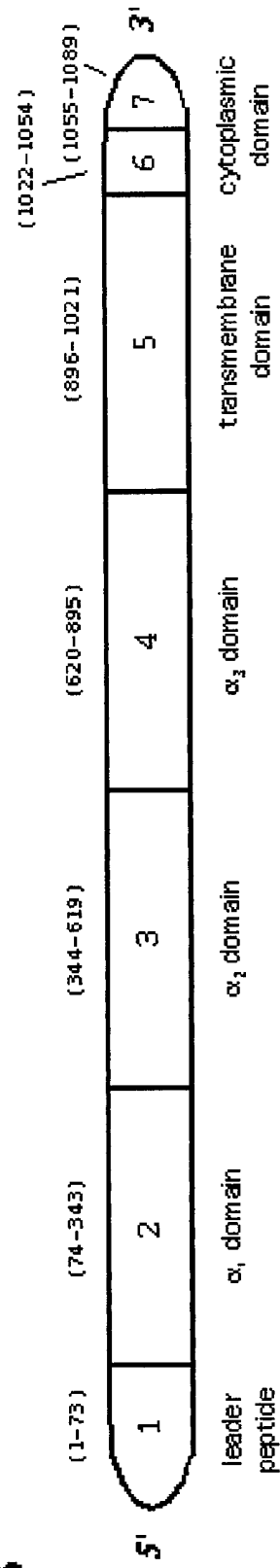


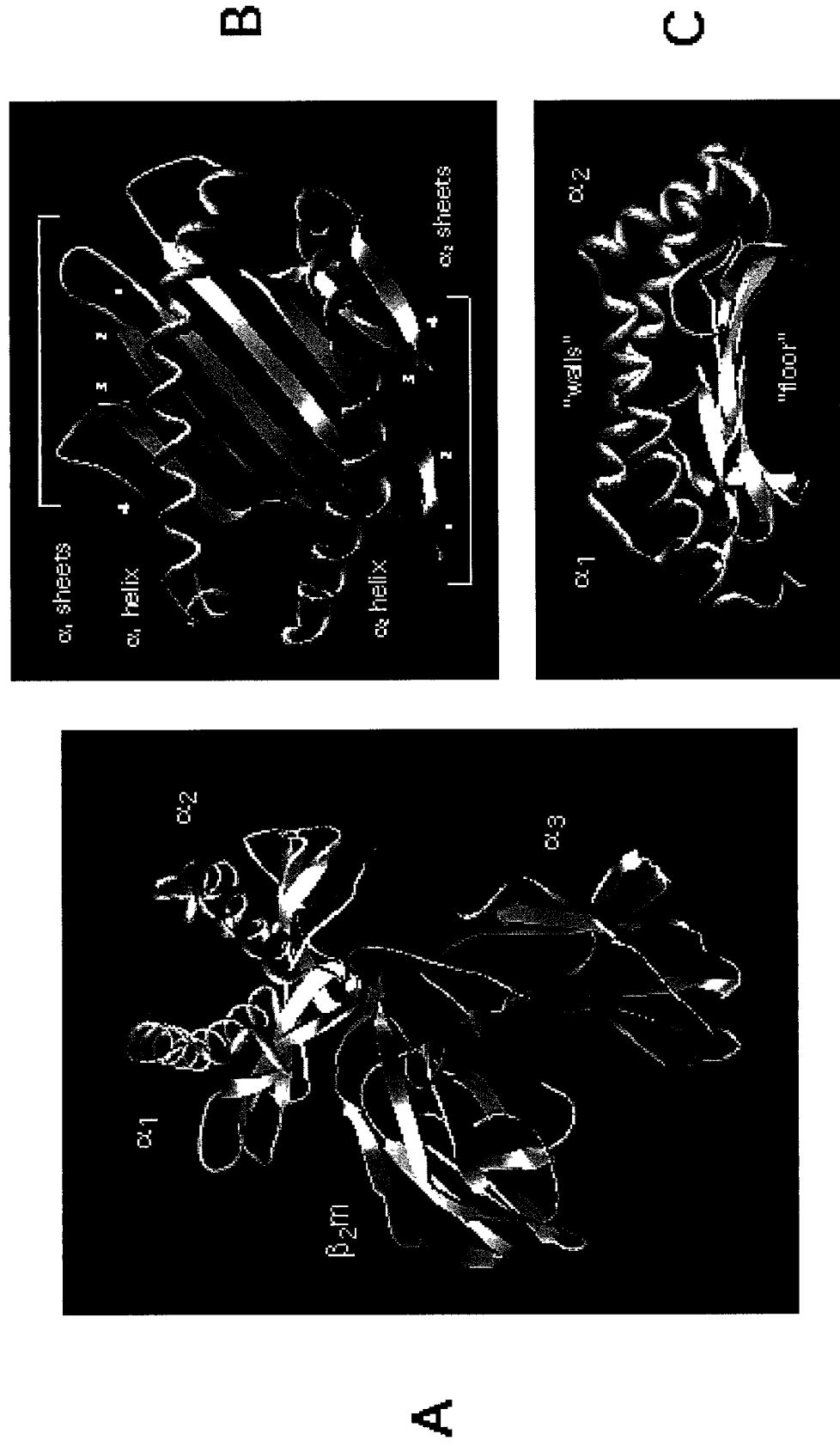
**A**



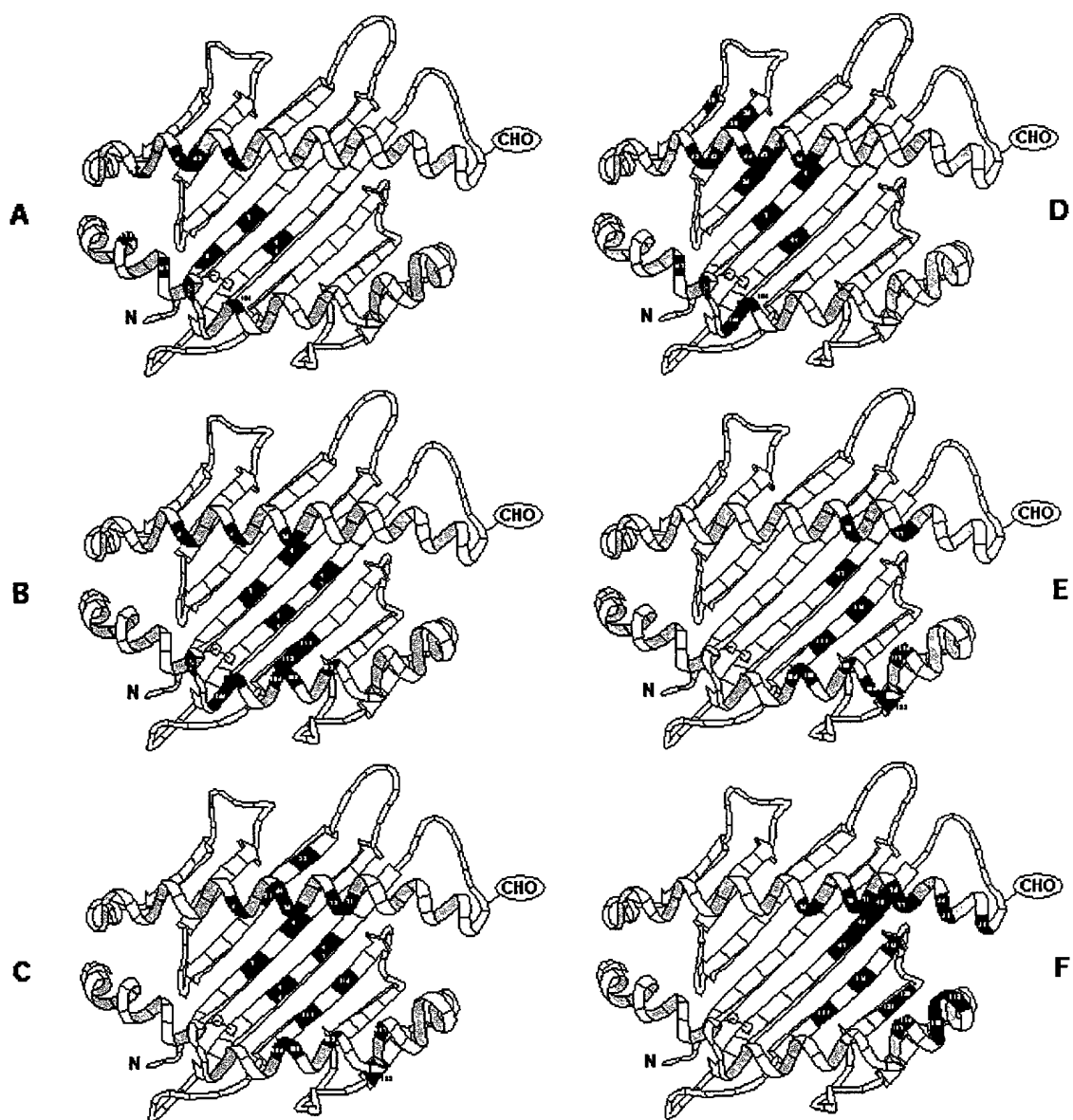
**B**



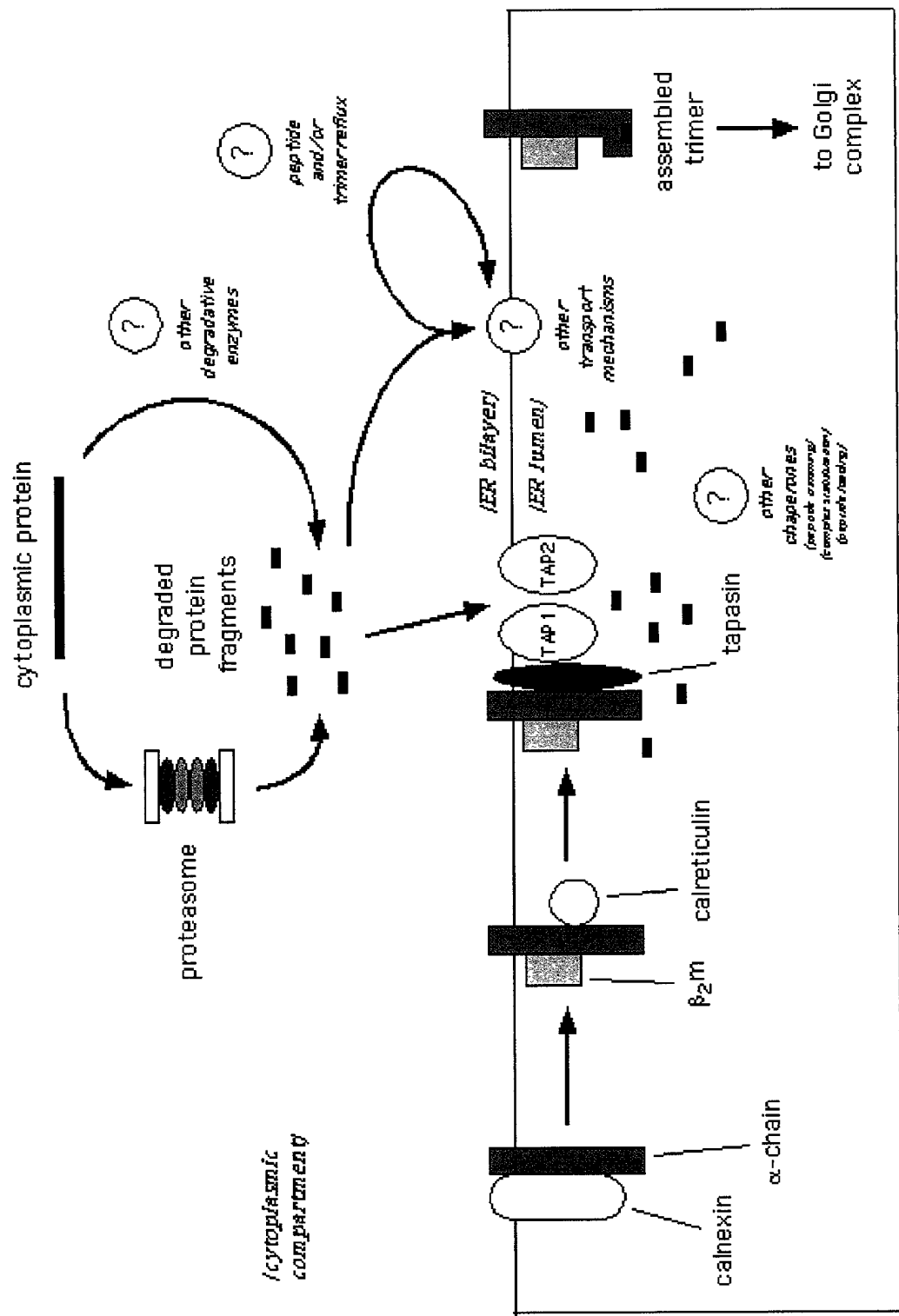
**FIG. 1**



**FIG. 2**



**FIG. 3**



**FIG. 4**

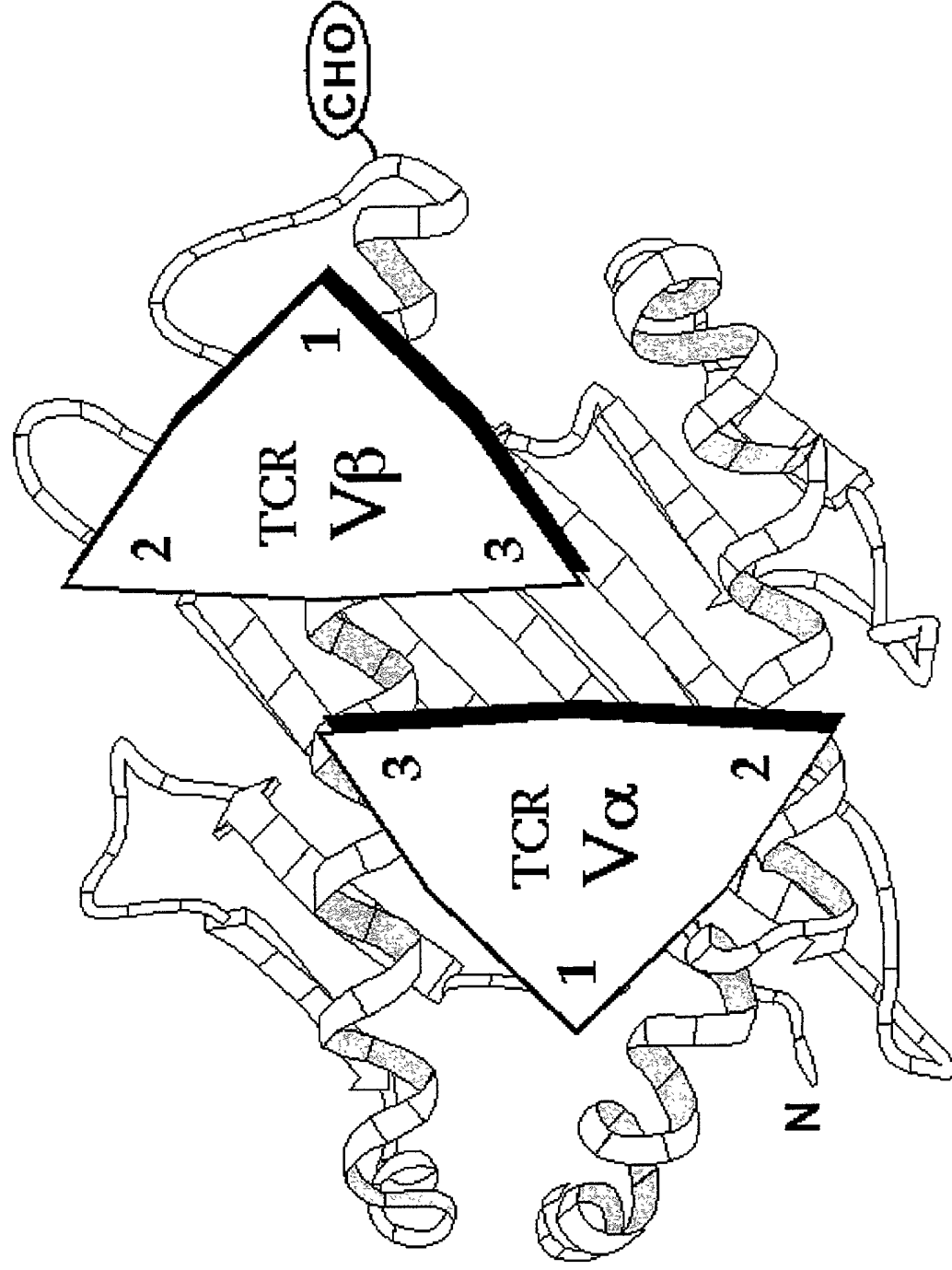
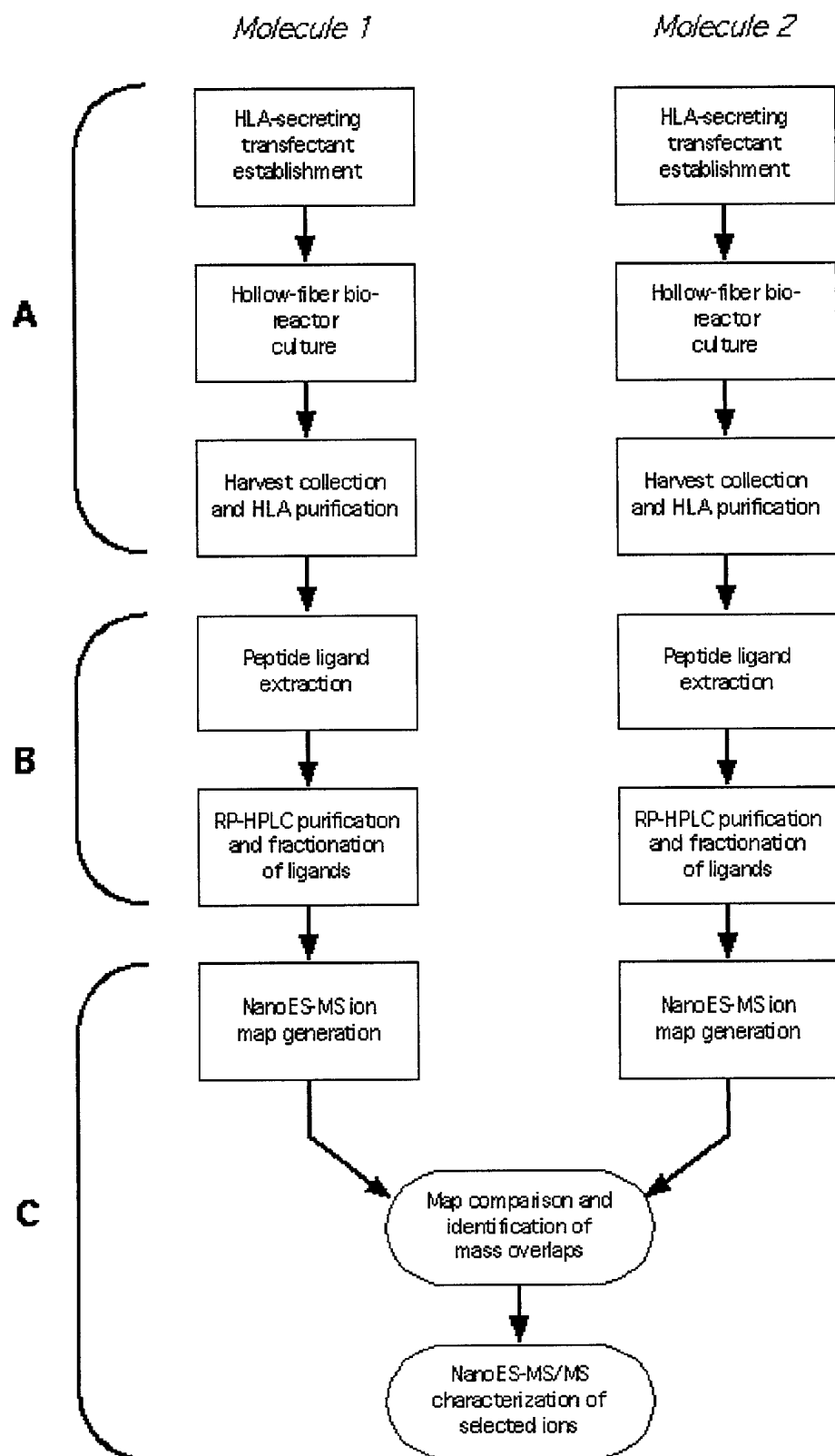
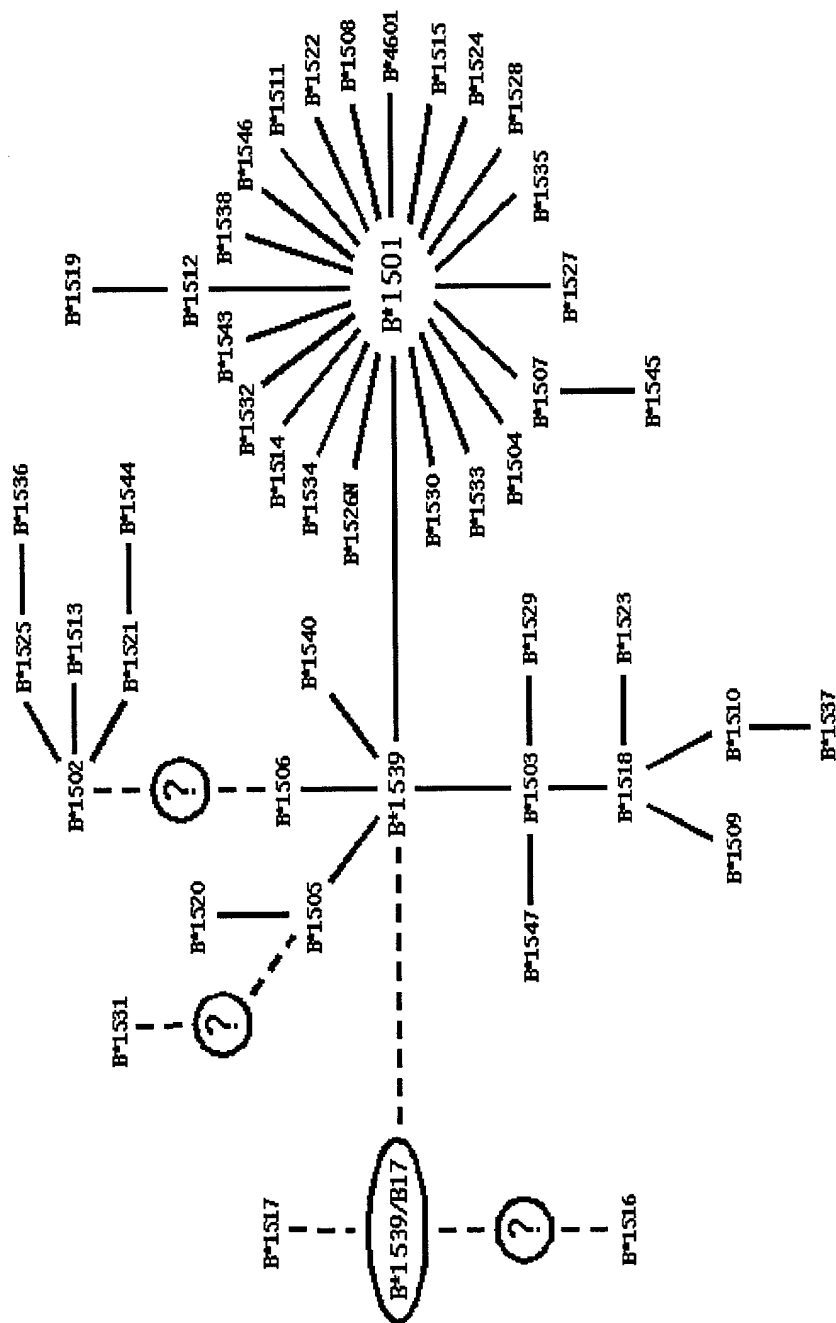


FIG. 5



**FIG. 6**



**FIG. 7**

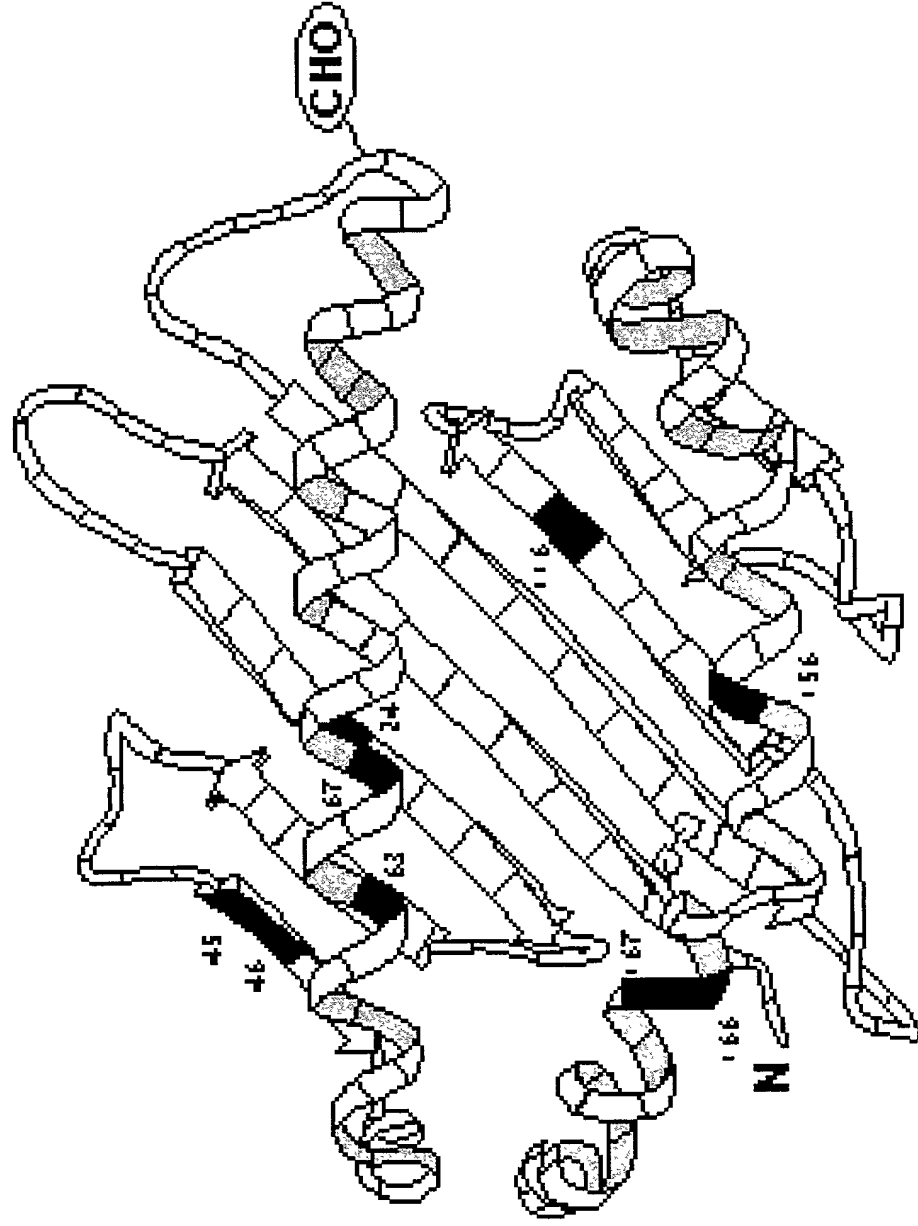
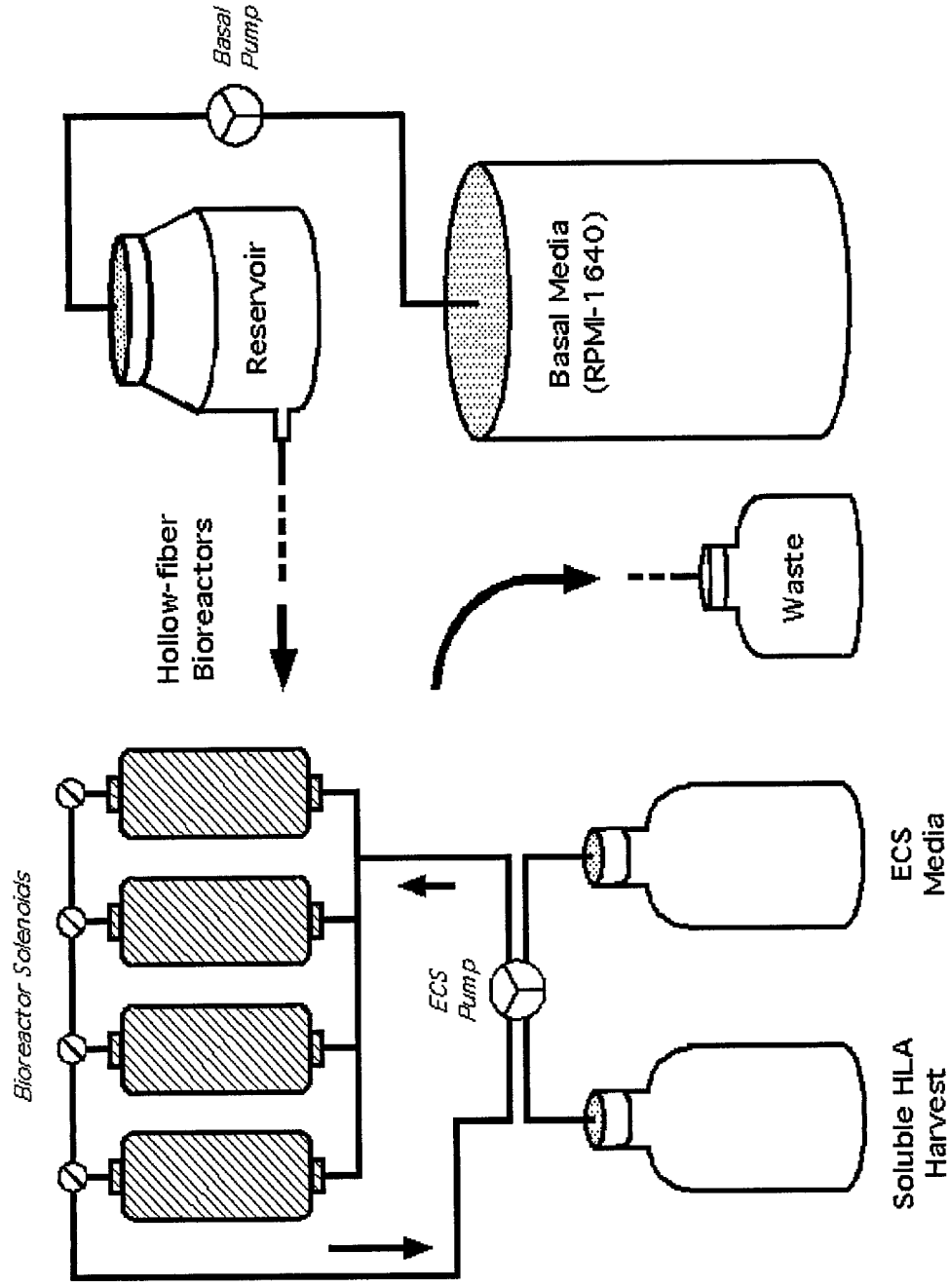
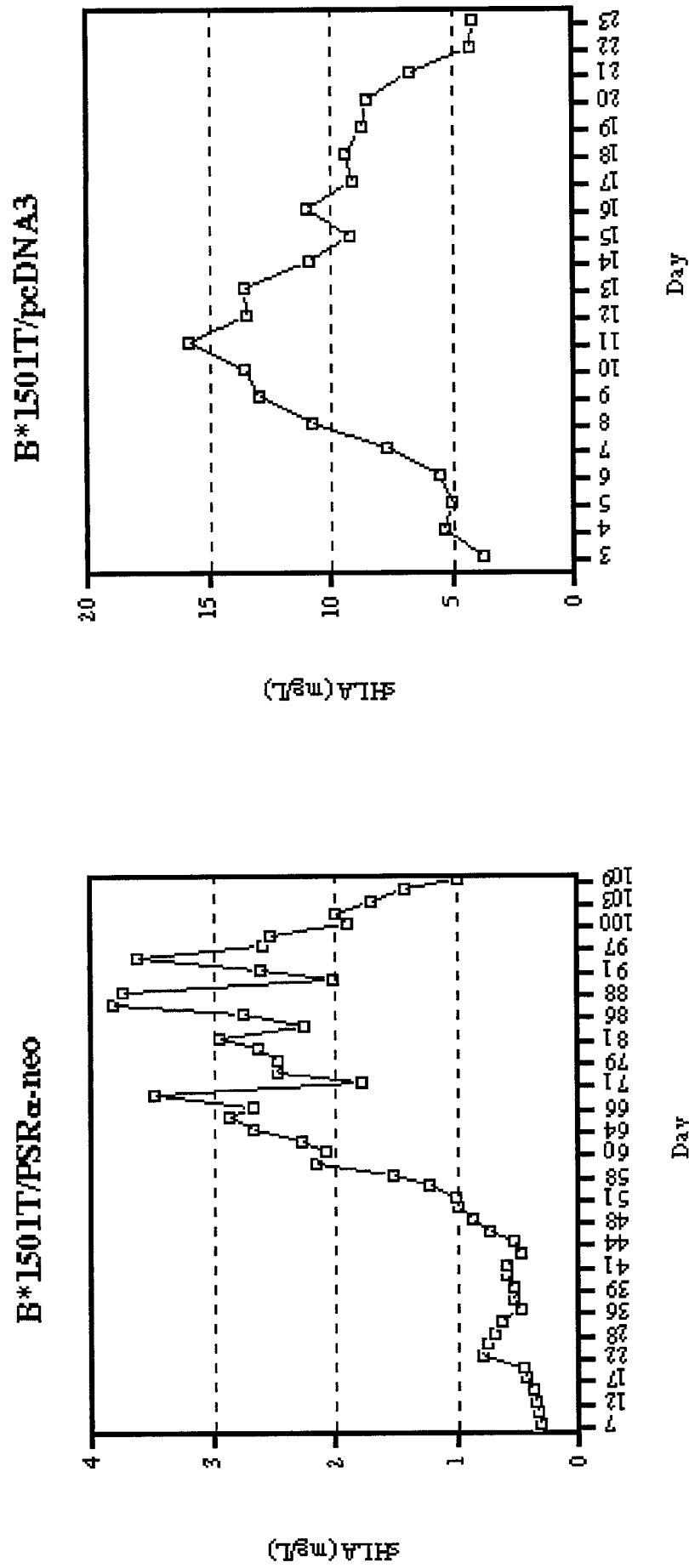


FIG. 8

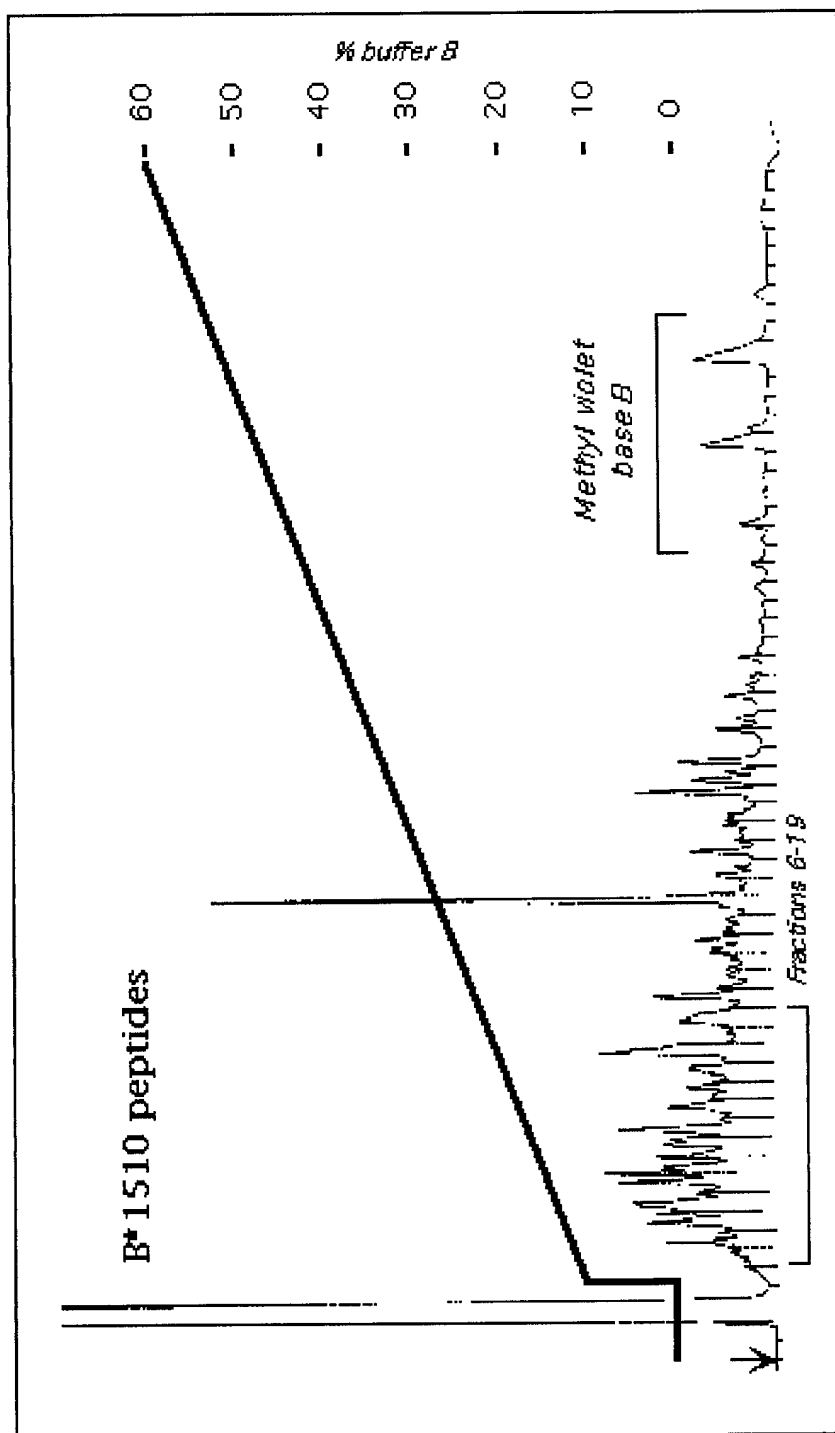




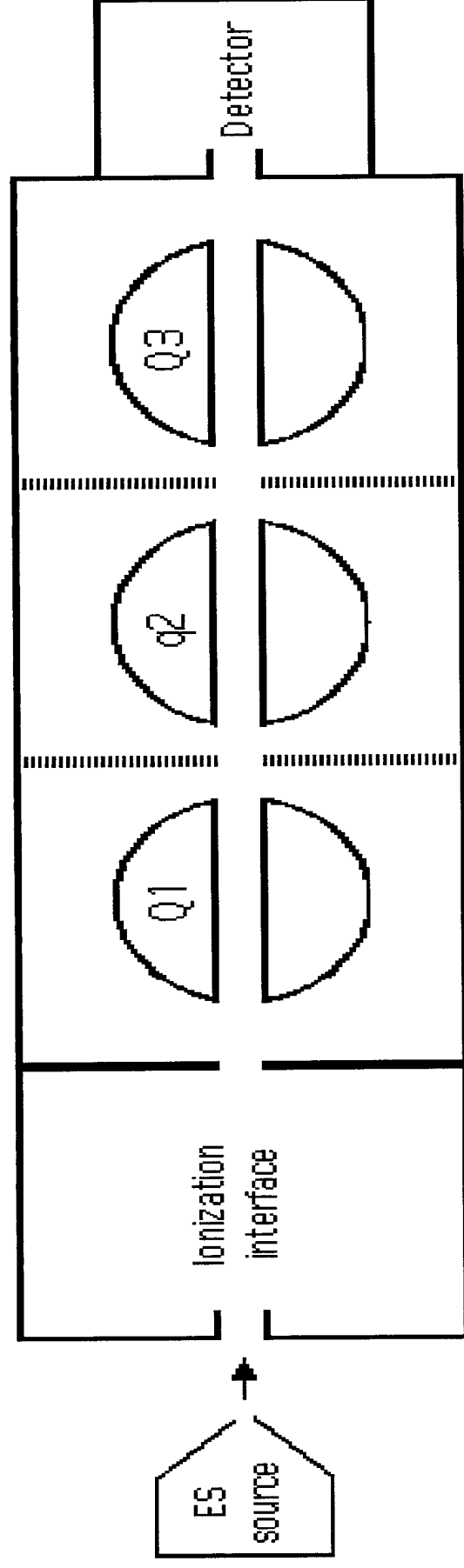
**FIG. 9**



**FIG. 10**



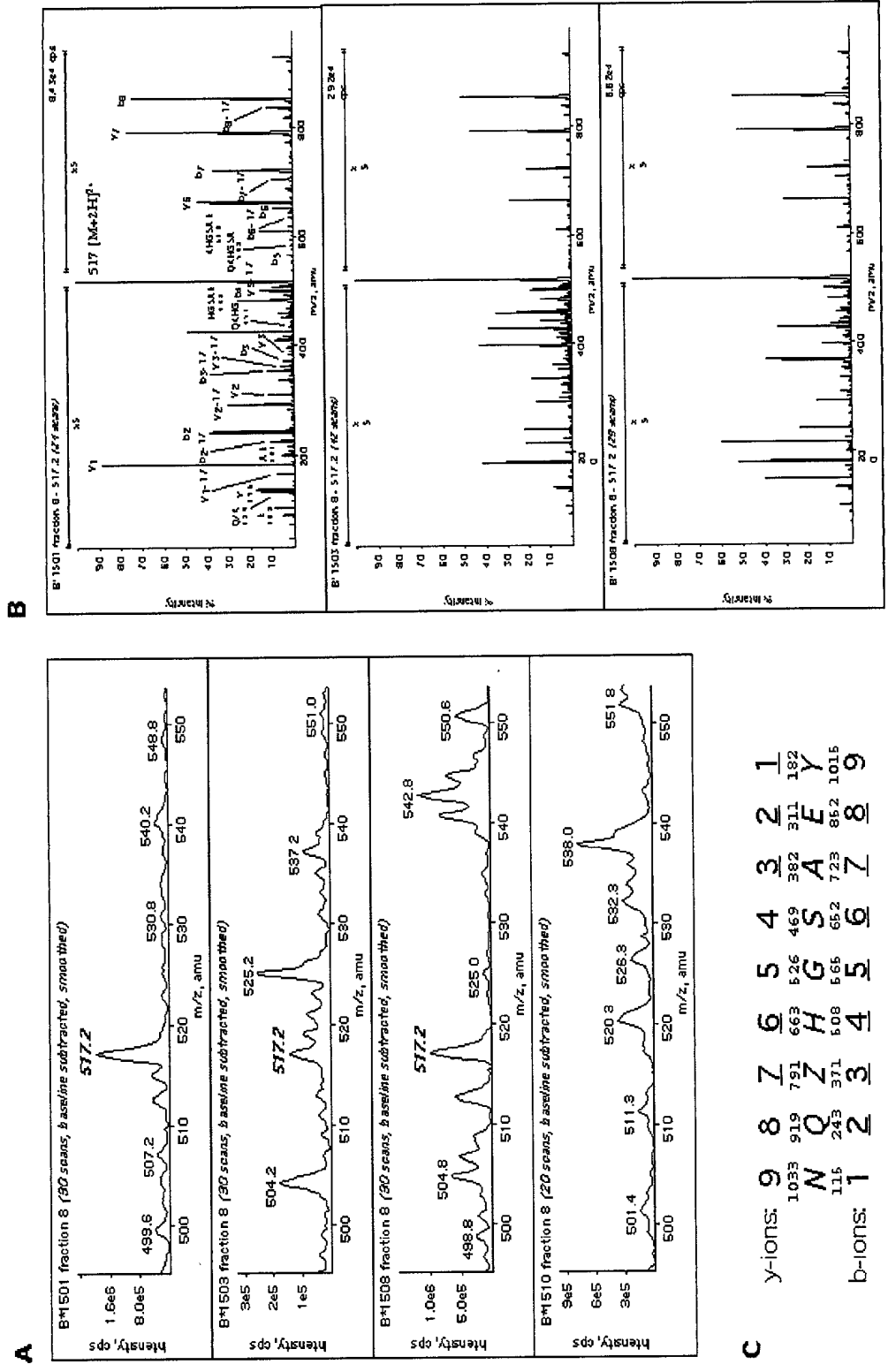
**FIG. 11**



Ion selection / transmission / collision

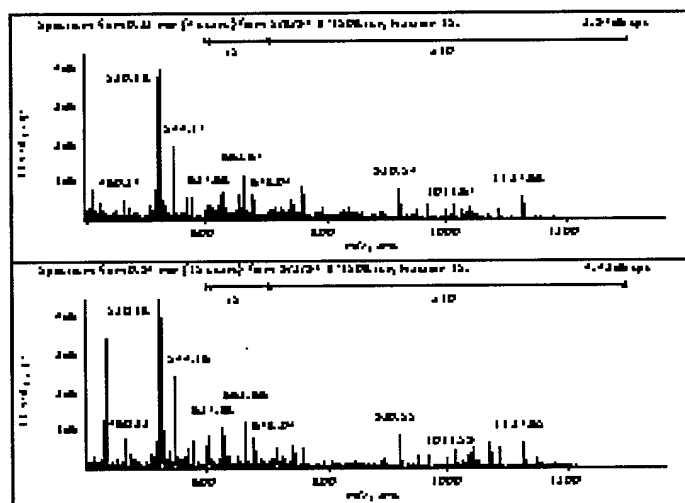
**FIG. 12**

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**FIG. 13**

A



**A** (W6/32-purified B\*1501 complexes)

| position:       | 1 | 2                         | 3                         | 4                         | 5                         | 6 | 7 | 8 | 9                         | 10 | 11 | 12 | 13 | 14 |
|-----------------|---|---------------------------|---------------------------|---------------------------|---------------------------|---|---|---|---------------------------|----|----|----|----|----|
| <i>dominant</i> | — | <b>Q</b> <sub>(8.0)</sub> | <b>K</b> <sub>(8.0)</sub> | —                         | —                         | — | — | — | <b>Y</b> <sub>(4.0)</sub> | —  | —  | —  | —  | —  |
|                 |   |                           | <b>F</b> <sub>(5.0)</sub> |                           |                           |   |   |   |                           |    |    |    |    |    |
|                 |   |                           | <b>R</b> <sub>(4.0)</sub> |                           |                           |   |   |   |                           |    |    |    |    |    |
| <i>strong</i>   | — | <b>M</b> <sub>(3.0)</sub> | <b>Y</b> <sub>(3.0)</sub> | <b>P</b> <sub>(2.5)</sub> | <b>G</b> <sub>(2.0)</sub> | — | — | — | <b>F</b> <sub>(3.0)</sub> | —  | —  | —  | —  | —  |
|                 |   | <b>L</b> <sub>(2.0)</sub> | <b>P</b> <sub>(2.0)</sub> | <b>D</b> <sub>(2.5)</sub> |                           |   |   |   |                           |    |    |    |    |    |
|                 |   | <b>V</b> <sub>(2.0)</sub> | <b>N</b> <sub>(2.0)</sub> | <b>G</b> <sub>(2.0)</sub> |                           |   |   |   |                           |    |    |    |    |    |
|                 |   |                           | <b>H</b> <sub>(2.0)</sub> | <b>E</b> <sub>(2.0)</sub> |                           |   |   |   |                           |    |    |    |    |    |

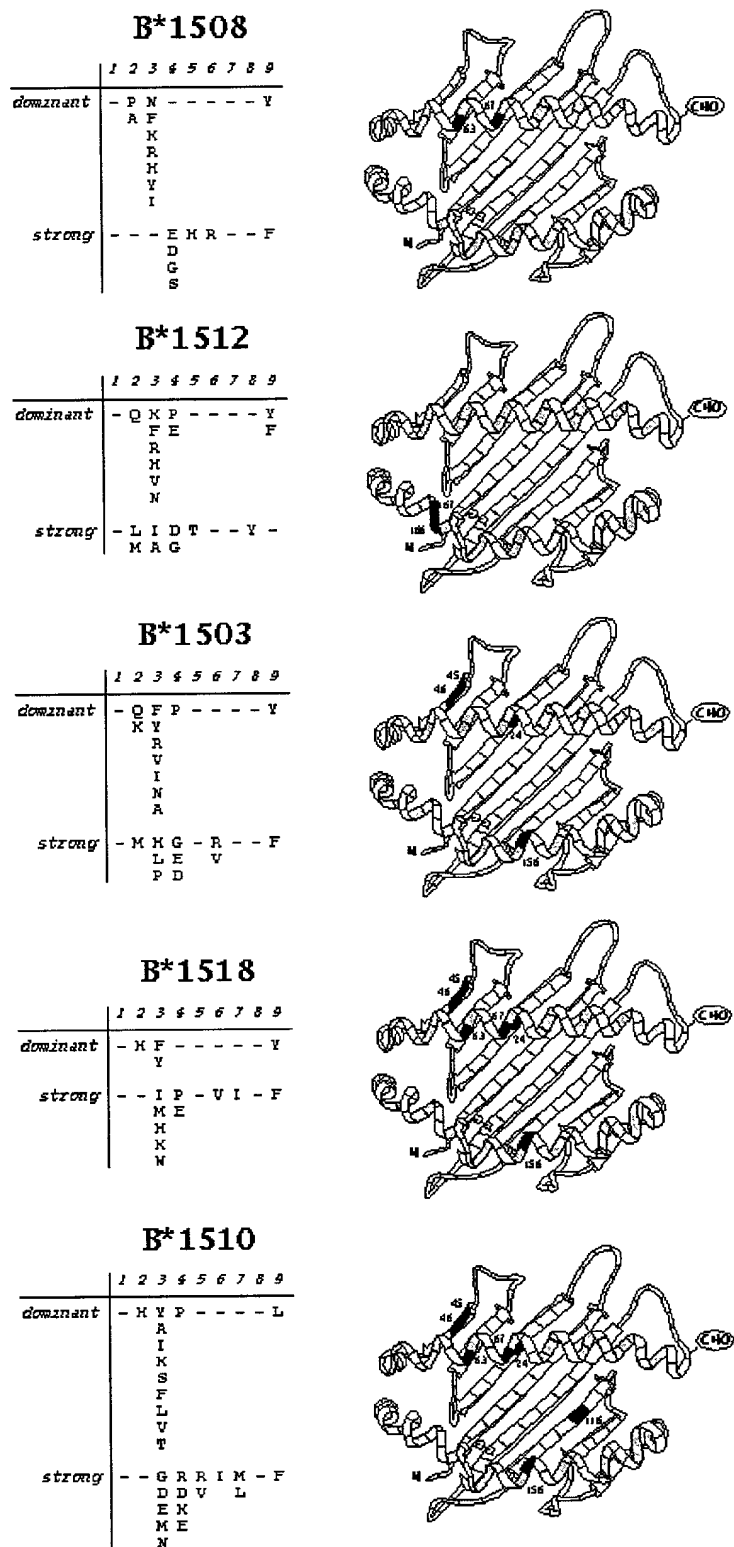
**FIG. 15**

**B** (BBM.1-purified B\*1501 complexes)

| position:       | 1 | 2                         | 3                         | 4                         | 5                         | 6 | 7 | 8 | 9                         | 10 | 11 | 12 | 13 | 14 |
|-----------------|---|---------------------------|---------------------------|---------------------------|---------------------------|---|---|---|---------------------------|----|----|----|----|----|
| <i>dominant</i> | — | <b>Q</b> <sub>(7.5)</sub> | —                         | —                         | —                         | — | — | — | <b>Y</b> <sub>(4.0)</sub> | —  | —  | —  | —  | —  |
| <i>strong</i>   | — | <b>P</b> <sub>(3.5)</sub> | <b>F</b> <sub>(2.5)</sub> | <b>P</b> <sub>(2.2)</sub> | <b>I</b> <sub>(2.0)</sub> | — | — | — | <b>F</b> <sub>(3.0)</sub> | —  | —  | —  | —  | —  |
|                 |   | <b>L</b> <sub>(2.5)</sub> | <b>K</b> <sub>(2.5)</sub> | <b>D</b> <sub>(2.0)</sub> |                           |   |   |   |                           |    |    |    |    |    |
|                 |   | <b>V</b> <sub>(2.0)</sub> | <b>R</b> <sub>(2.0)</sub> | <b>G</b> <sub>(2.0)</sub> |                           |   |   |   |                           |    |    |    |    |    |
|                 |   |                           | <b>P</b> <sub>(2.0)</sub> |                           |                           |   |   |   |                           |    |    |    |    |    |
|                 |   |                           | <b>N</b> <sub>(2.0)</sub> |                           |                           |   |   |   |                           |    |    |    |    |    |

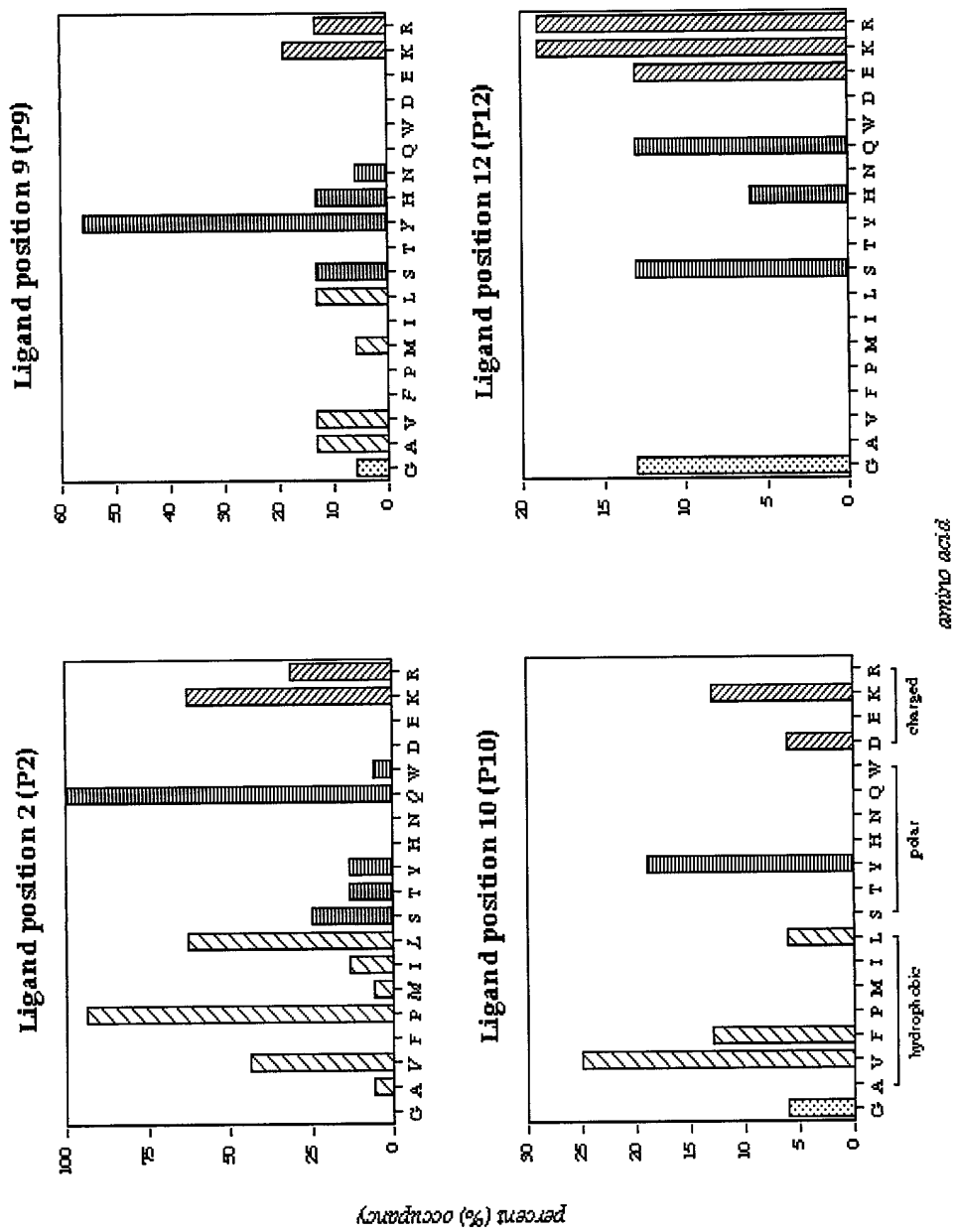
**FIG. 15 CONT'D.**





**FIG. 16**

**FIG. 17**



| Fraction 10     |   |   |   |   |   |   |   |   |    |    |    |
|-----------------|---|---|---|---|---|---|---|---|----|----|----|
|                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| <i>dominant</i> | P | - | - | - | - | - | - | - | -  | -  | -  |
|                 | Q |   |   |   |   |   |   |   |    |    |    |
| <i>strong</i>   | W | K | G | - | - | - | - | - | -  | -  | -  |
|                 |   | R | F |   |   |   |   |   |    |    |    |
|                 |   | H |   |   |   |   |   |   |    |    |    |
| <i>weak</i>     | S | E | D | S | H | V | I | Y | K  | V  | E  |
|                 | I |   | N | W | S | T |   |   |    |    |    |
|                 |   |   | M | P |   |   |   |   |    |    |    |
|                 |   |   | I |   |   |   |   |   |    |    |    |

| Fraction 15     |   |   |   |   |   |   |   |   |    |    |    |
|-----------------|---|---|---|---|---|---|---|---|----|----|----|
|                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| <i>dominant</i> | P | - | - | - | - | - | - | - | -  | -  | -  |
|                 | Q |   |   |   |   |   |   |   |    |    |    |
| <i>strong</i>   | W | K | G | - | - | - | - | - | -  | -  | -  |
|                 |   | R | F |   |   |   |   |   |    |    |    |
|                 |   | H |   |   |   |   |   |   |    |    |    |
| <i>weak</i>     | S | E | D | S | H | V | I | Y | K  | V  | E  |
|                 | I |   | N | W | S | T |   |   |    |    |    |
|                 |   |   | M | P |   |   |   |   |    |    |    |
|                 |   |   | I |   |   |   |   |   |    |    |    |

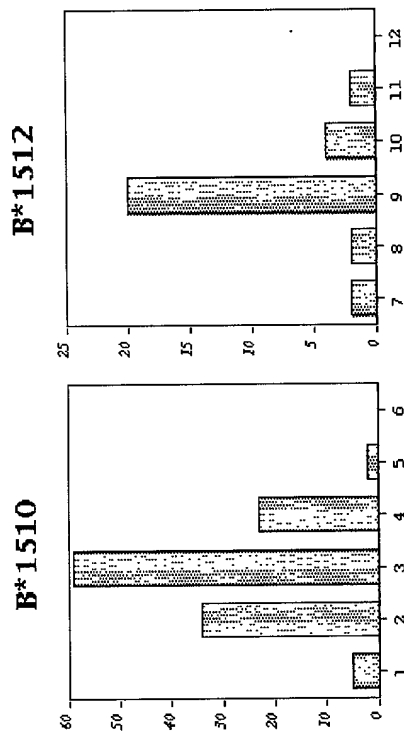
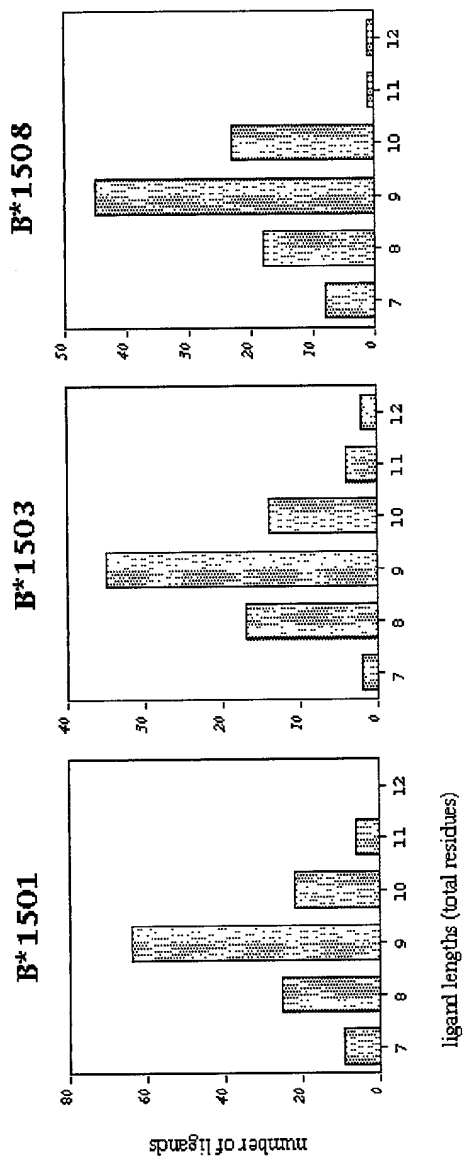
| Fraction 28     |   |   |   |   |   |   |   |   |    |    |    |
|-----------------|---|---|---|---|---|---|---|---|----|----|----|
| position:       | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| <i>dominant</i> | K | - | - | - | - | - | - | - | -  | -  | -  |
| <i>strong</i>   | Q | H | G | L | R | I | D | K | V  | E  | -  |
|                 | V | N |   | S |   |   | N |   |    |    |    |
|                 | P | R |   | H |   |   |   |   |    |    |    |
| <i>weak</i>     | - | P | E | P | V | P | Q | Y | -  | F  | S  |
|                 |   | F |   | E | A | M | E | F |    | P  | K  |
|                 |   | K |   |   | F |   | A |   |    |    |    |
|                 |   | D |   |   |   |   | H |   |    |    |    |
|                 |   |   |   |   |   |   | W |   |    |    |    |

**FIG. 19**

**FIG. 19**  
**CONT'D.**

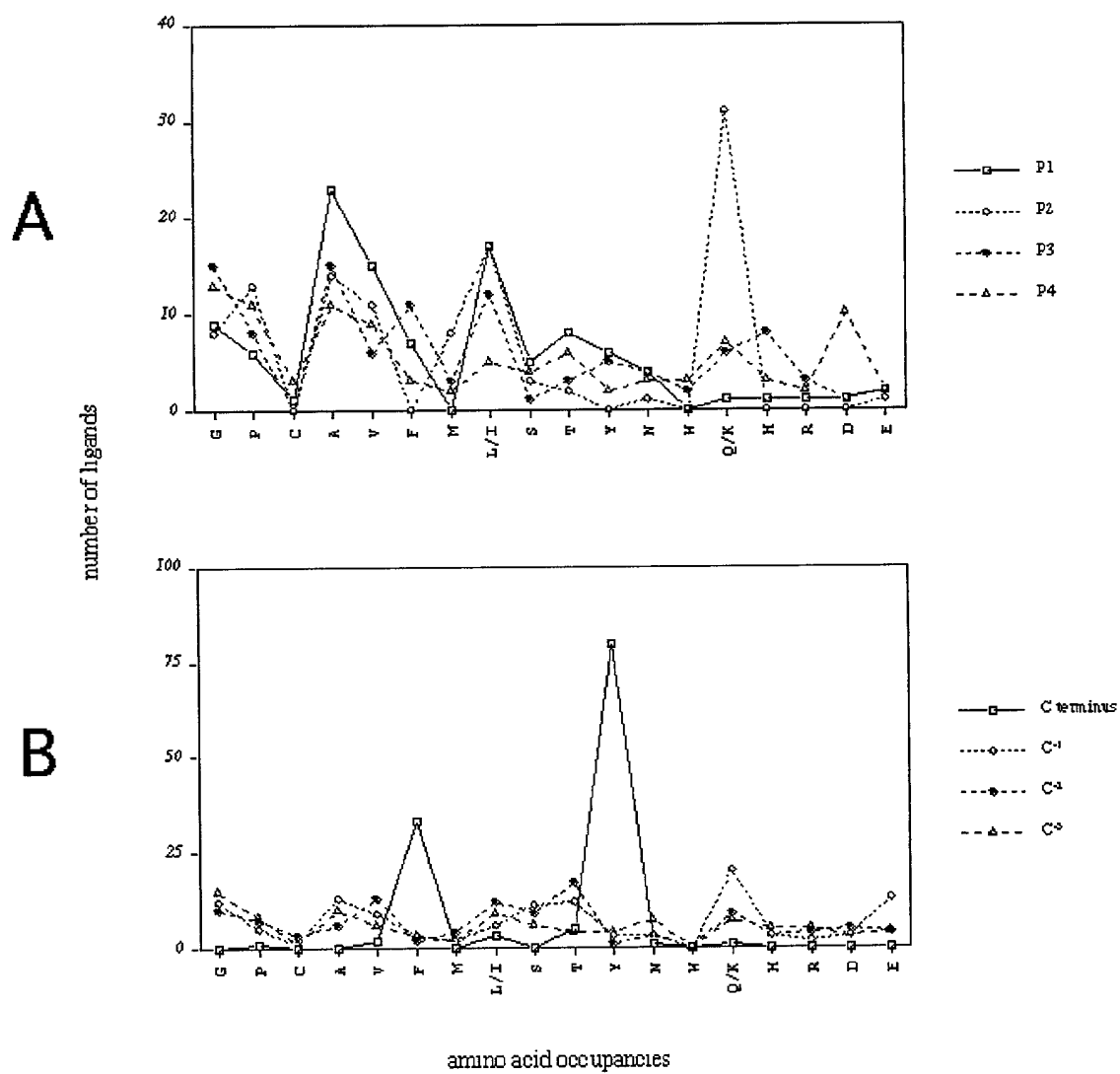
| Fraction 31          |   |   |   |   |   |   |   |   |   |   |
|----------------------|---|---|---|---|---|---|---|---|---|---|
| posi<br>tion:        | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 0 |
| <i>domi<br/>nant</i> | - | K | - | W | - | - | - | - | - | - |
| <i>strong</i>        | S | H | N | R | S | F | - | G | F |   |
|                      | Q |   |   | M | Y | V |   |   |   |   |
|                      | P |   |   |   |   |   |   |   |   |   |
| <i>weak</i>          | L | Y | A | - | L | - | Y | Y | - |   |
|                      |   | L |   |   | K |   | S |   |   |   |
|                      |   | V |   |   |   |   | K |   |   |   |

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**FIG. 20**

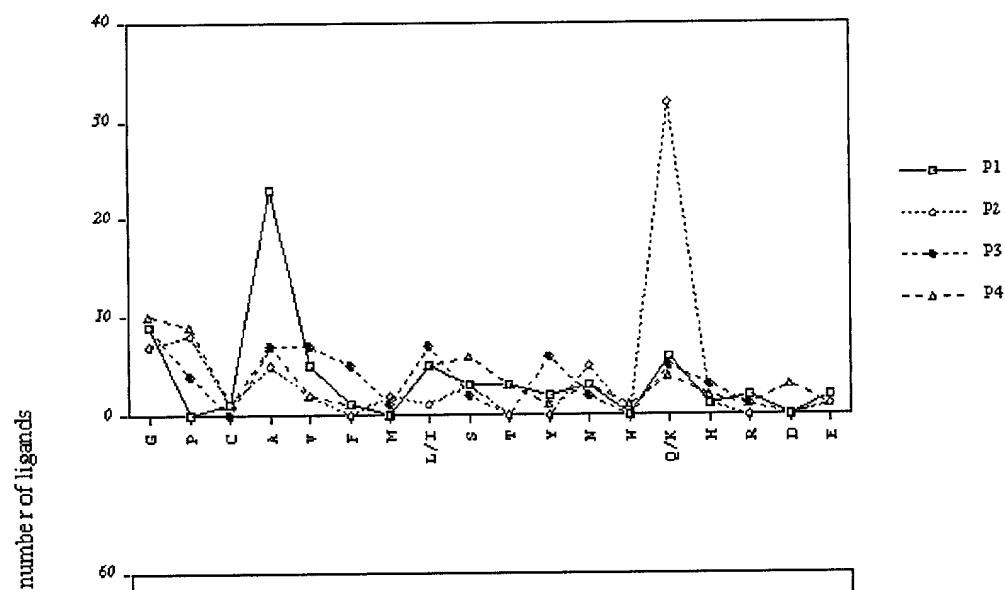
B\*1501



**FIG. 21**

B\*1503

A



B

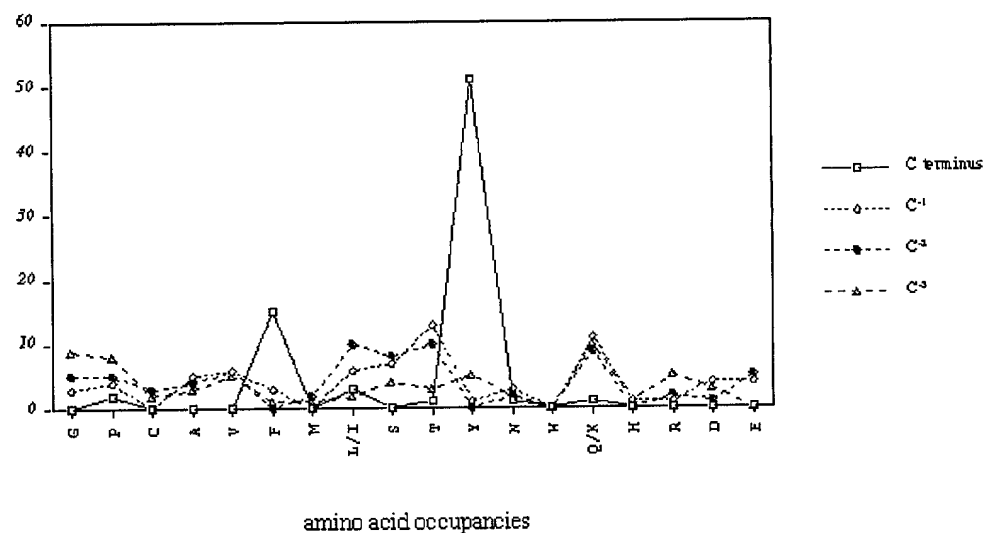
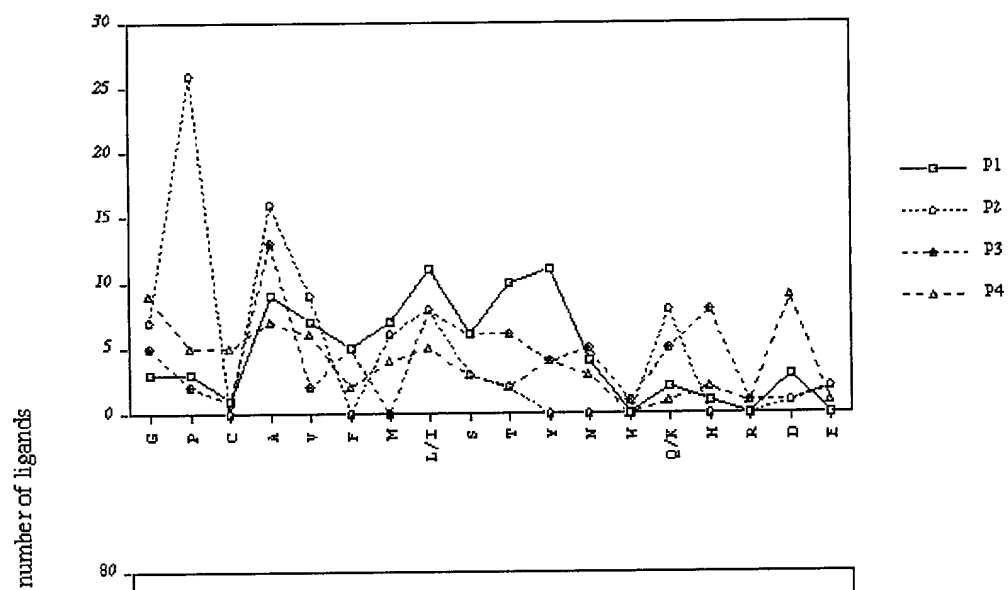


FIG. 22



B\*1508

A



B

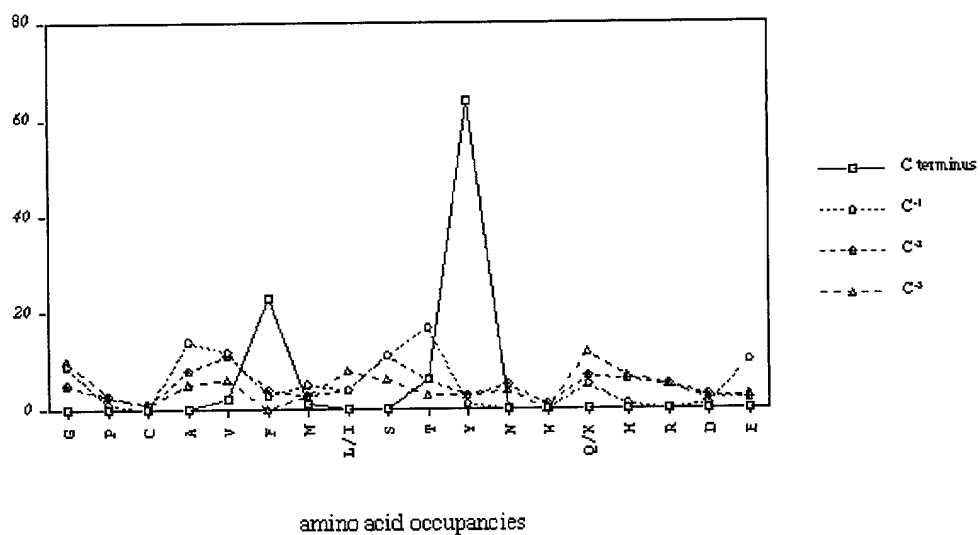
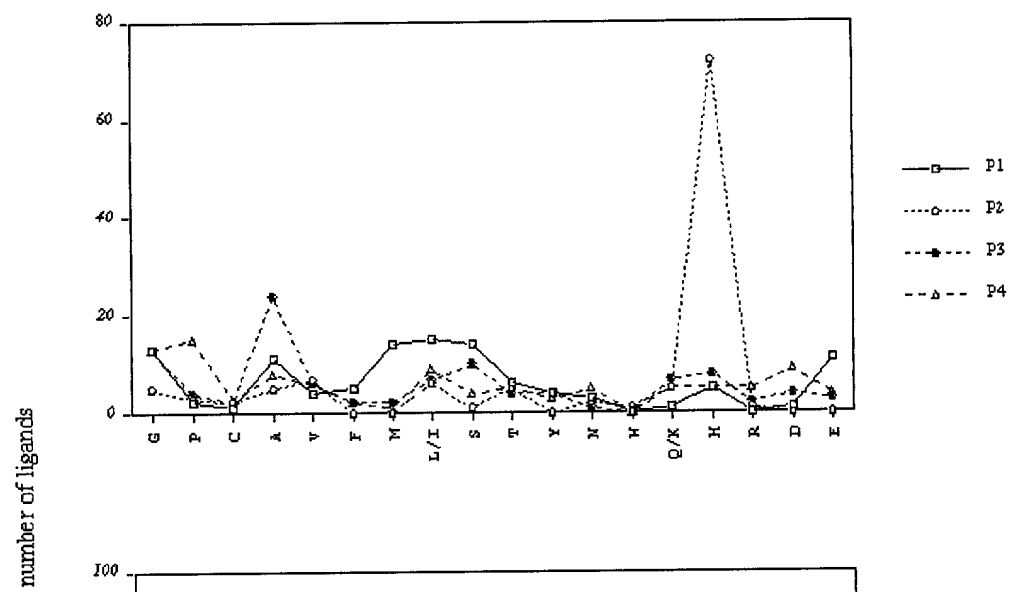


FIG. 23

B\*1510

A



B

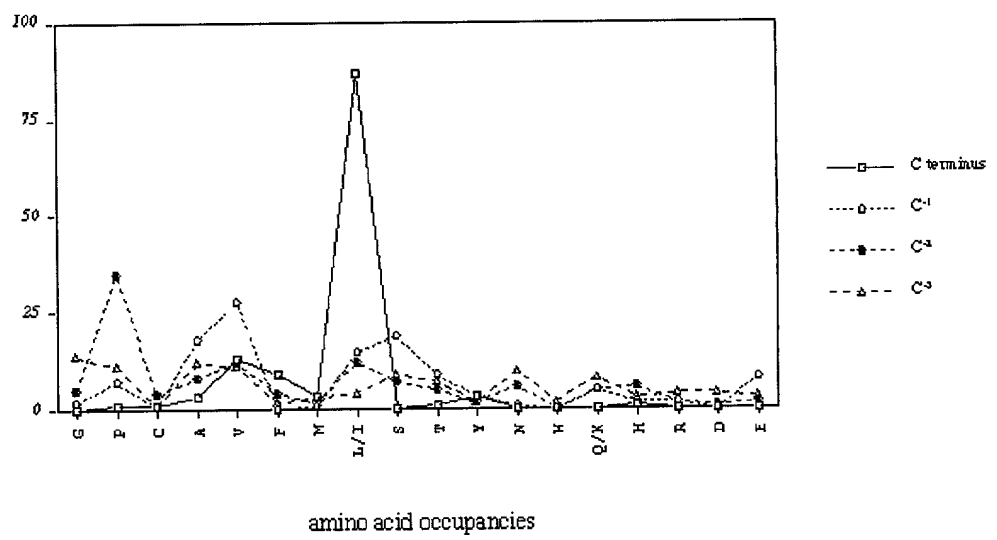
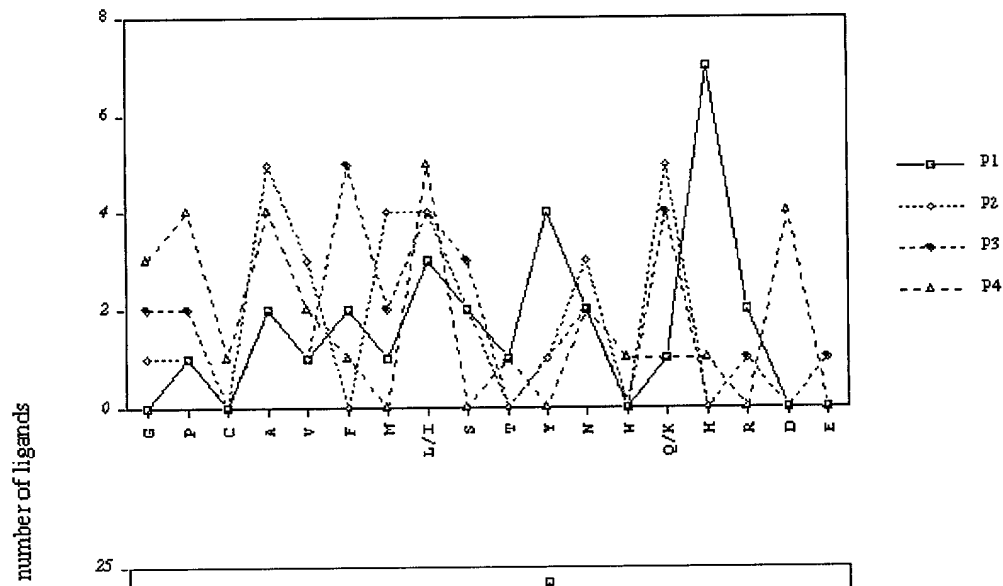


FIG. 24

B\*1512

A



B

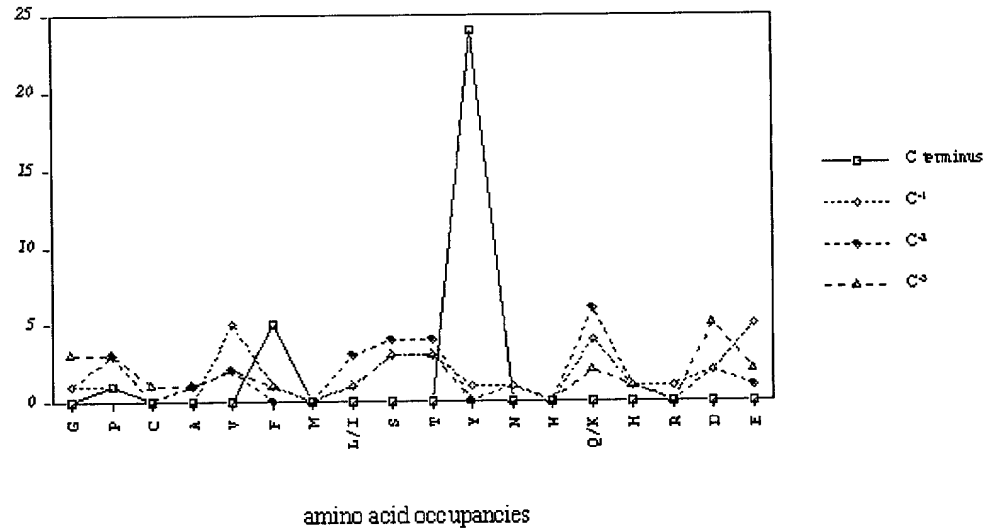
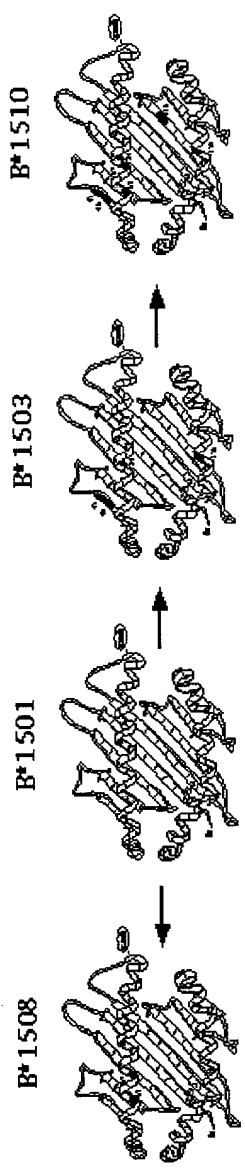


FIG. 25



|            |            |
|------------|------------|
| --MDRHTXF  | --MDRHTXF  |
| -----YT    | -----YT    |
| GSHEGWAY   | GSHEGWAY   |
| TS-----AV  | TS-----AV  |
| FVSMHAY    | FVSMHAY    |
| SCEDHVTY   | SCEDHVTY   |
| XAM--VT    | XAM--VT    |
| FLZAMSTY   | FLZAMSTY   |
| WUXDSZHY   | WUXDSZHY   |
| VVACV---   | VVACV---   |
| FLA-N-HTY  | FLA-N-HTY  |
| VVAPITTY   | VVAPITTY   |
| FQAKXTY    | FQAKXTY    |
| WGVVDITF   | WGVVDITF   |
| -----XVEF  | -----XVEF  |
| TARVXSVY   | TARVXSVY   |
| AAPCG---XV | AAPCG---XV |
| VLH--ET    | VLH--ET    |
| ILGPPGSVY  | ILGPPGSVY  |
| XLGIDNMV   | XLGIDNMV   |
| YMLDPSGVY  | YMLDPSGVY  |

|            |            |
|------------|------------|
| NQZHGSAEY  | NQZHGSAEY  |
| TPXGEPVLSY | TPXGEPVLSY |
| SQFGGSGY   | SQFGGSGY   |
| CPLSCFT    | CPLSCFT    |

|             |             |
|-------------|-------------|
| ACFA SGAGZ  | ACFA SGAGZ  |
| -G--CDY     | -G--CDY     |
| APMARGZY    | APMARGZY    |
| GQZAVDF     | GQZAVDF     |
| MPFAZIPN    | MPFAZIPN    |
| -O--DPPDMZY | -O--DPPDMZY |
| GQRKGAGSVF  | GQRKGAGSVF  |
| AEFMACZY    | AEFMACZY    |

**FIG. 26**

B\*1508



1 2 3 4 5 6 7 8

B\*1501



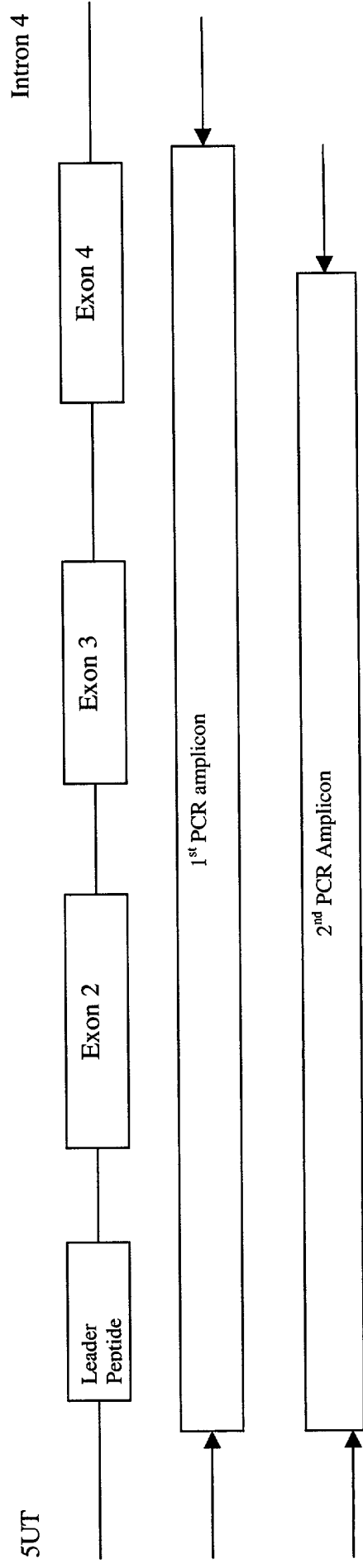
B\*1503

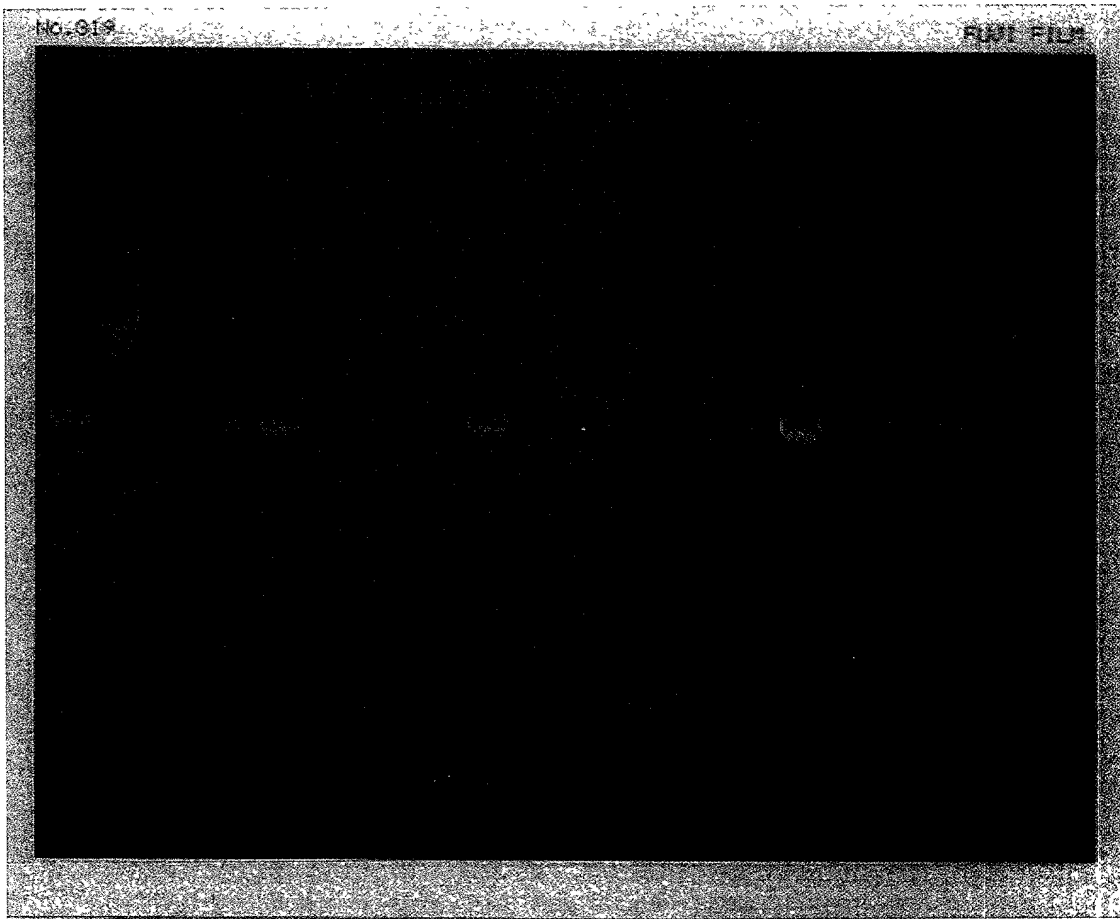


FIG. 27



**FIG. 29 PCR Strategy**



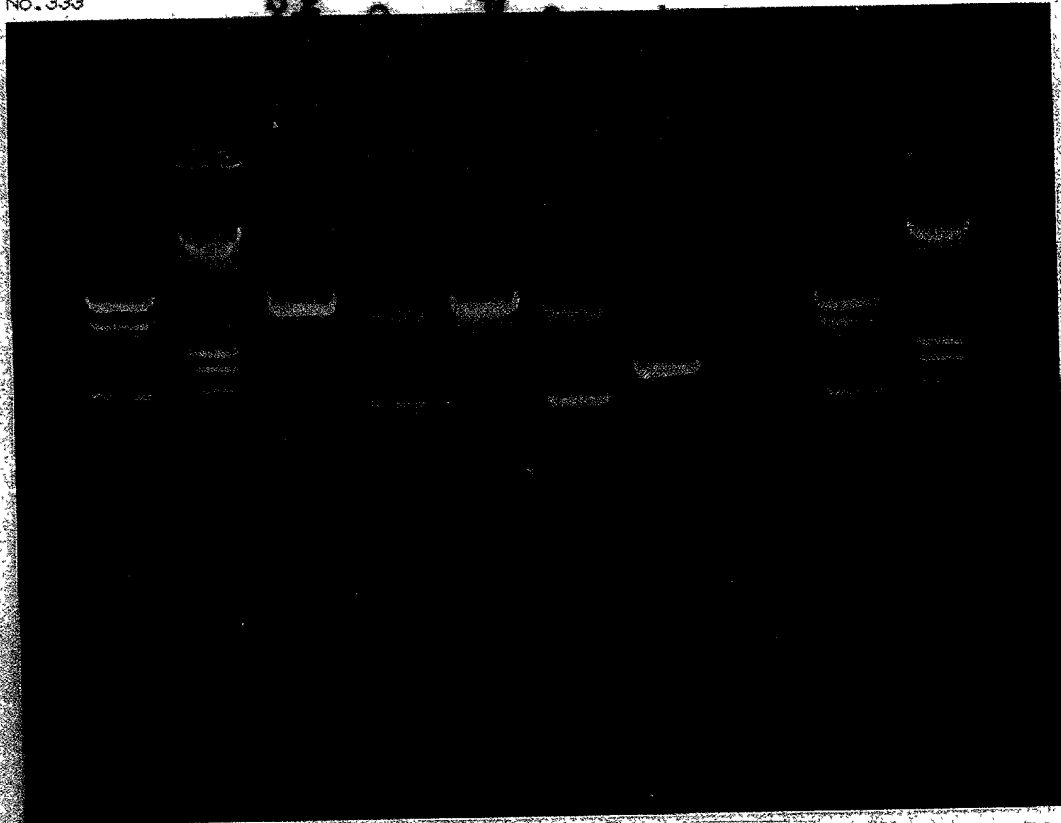


**FIG. 30**



No. 333

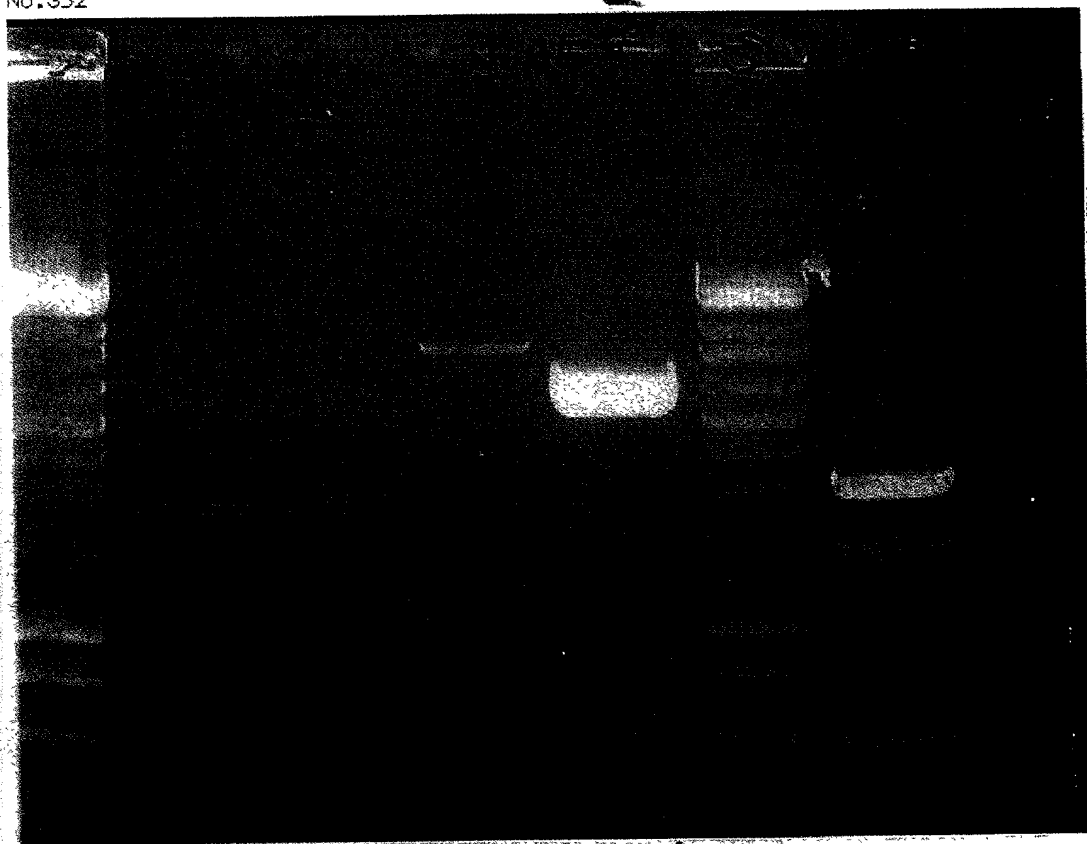
FUJ1 FILM



**FIG. 31**

No. 352

FUJI FILM



1 Hour 0.8% Gel

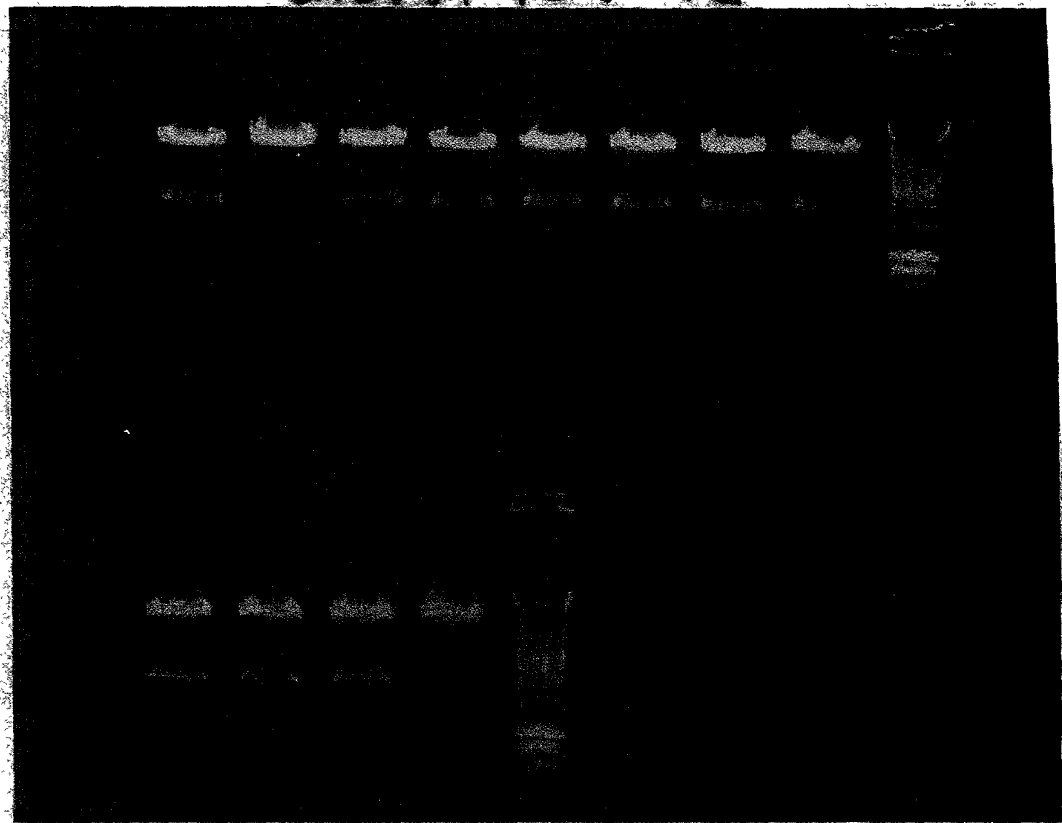
**FIG. 32**

GDNA FIG. 5

No. 368

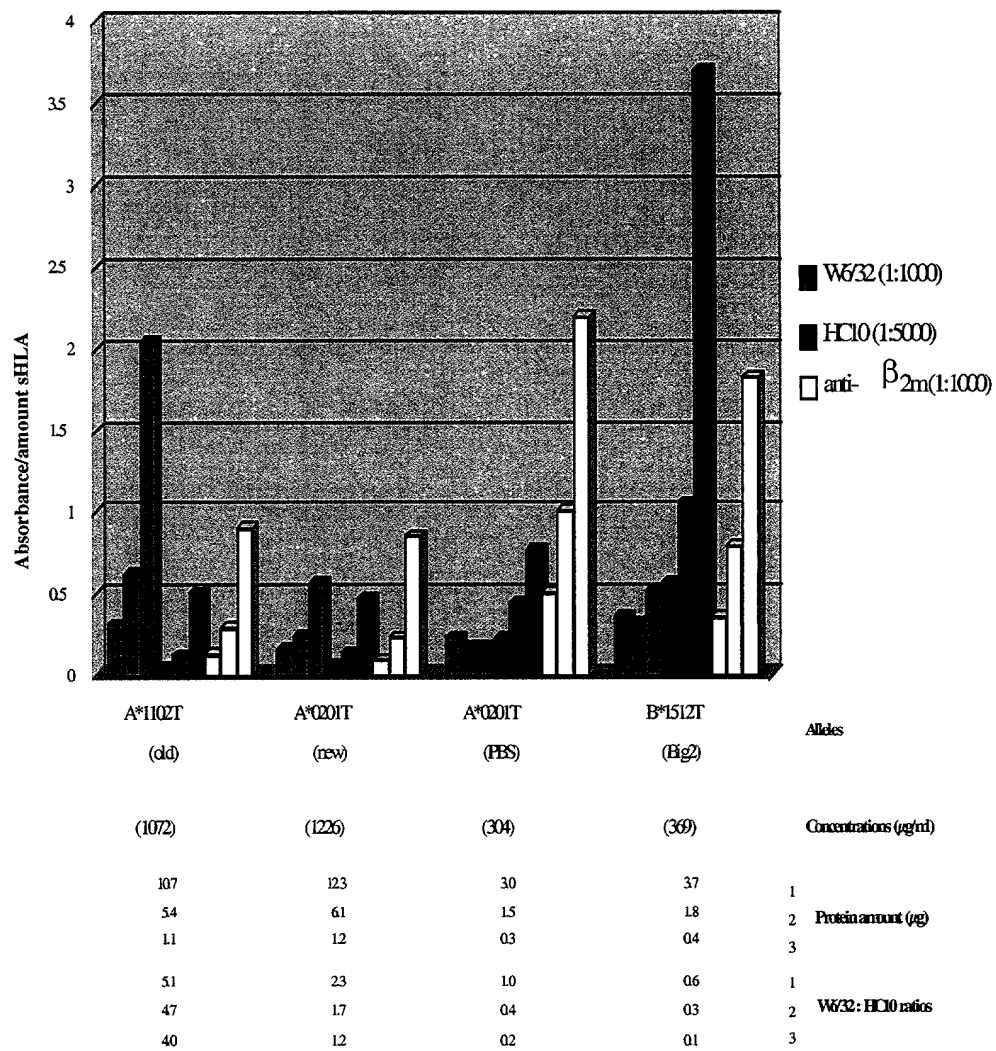
3A394T PC1-12

FUJI FILM

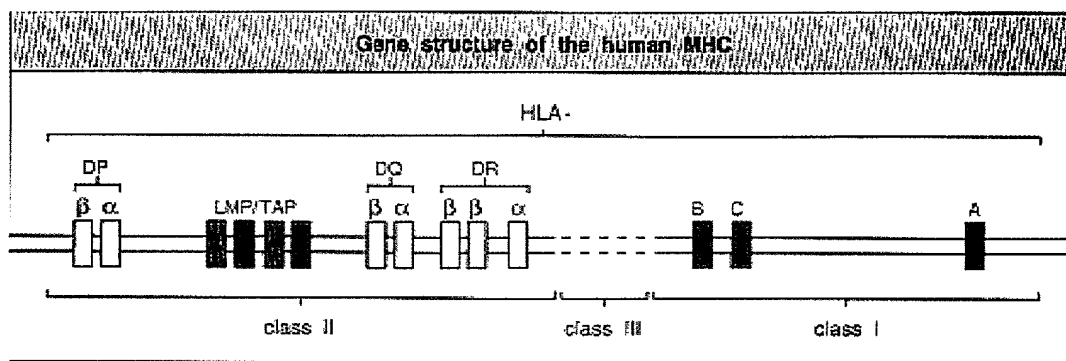


**FIG. 33**

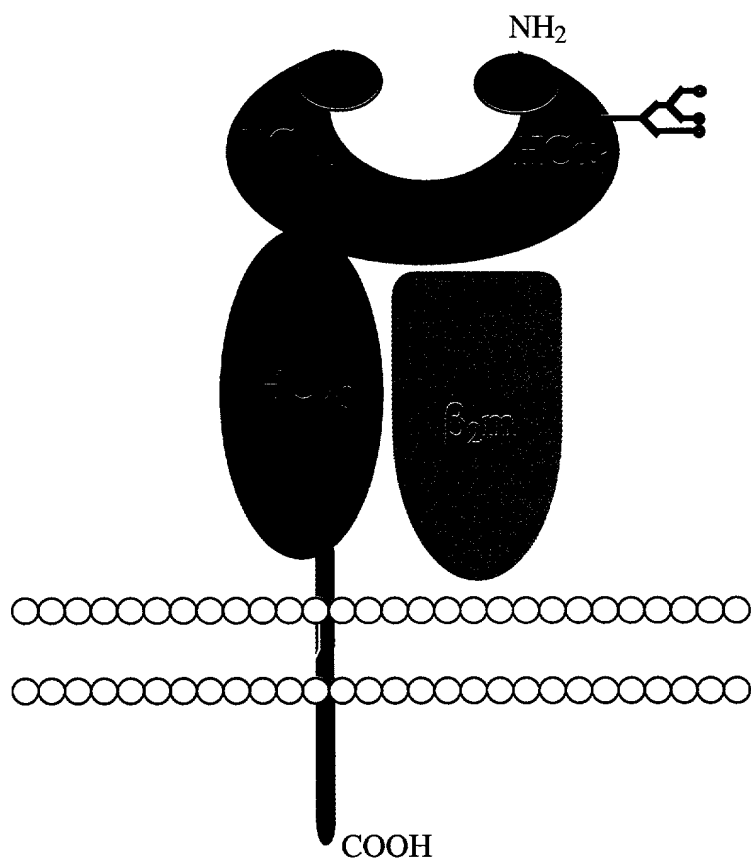
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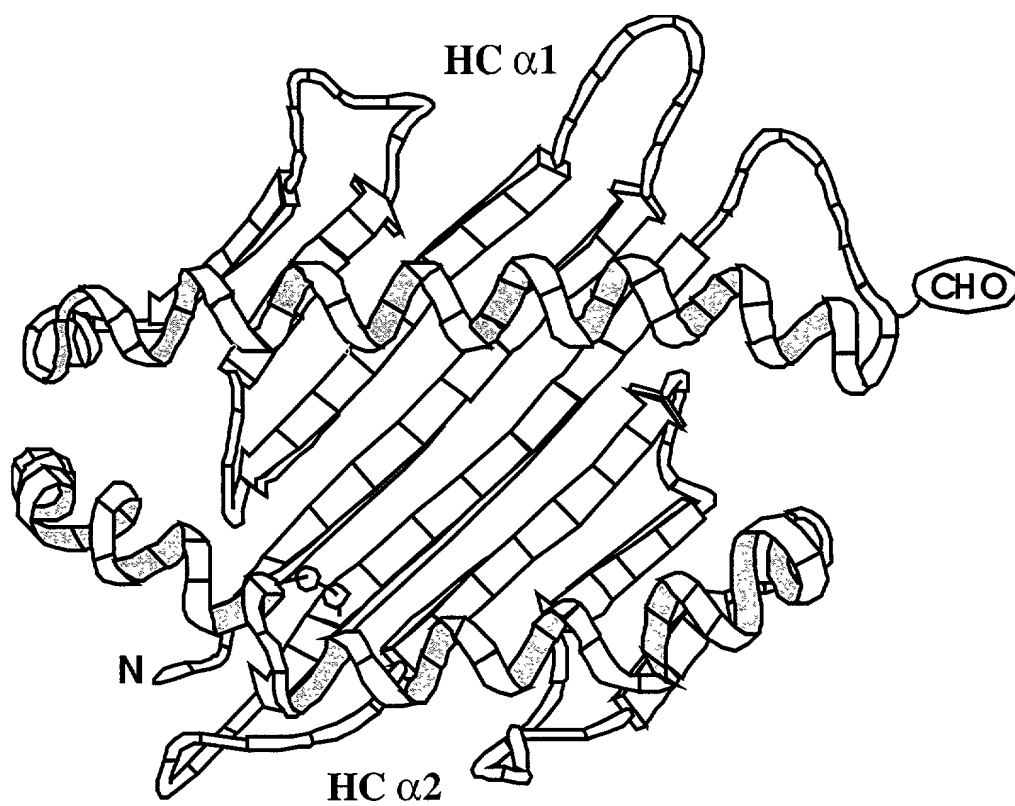
**FIG. 34**



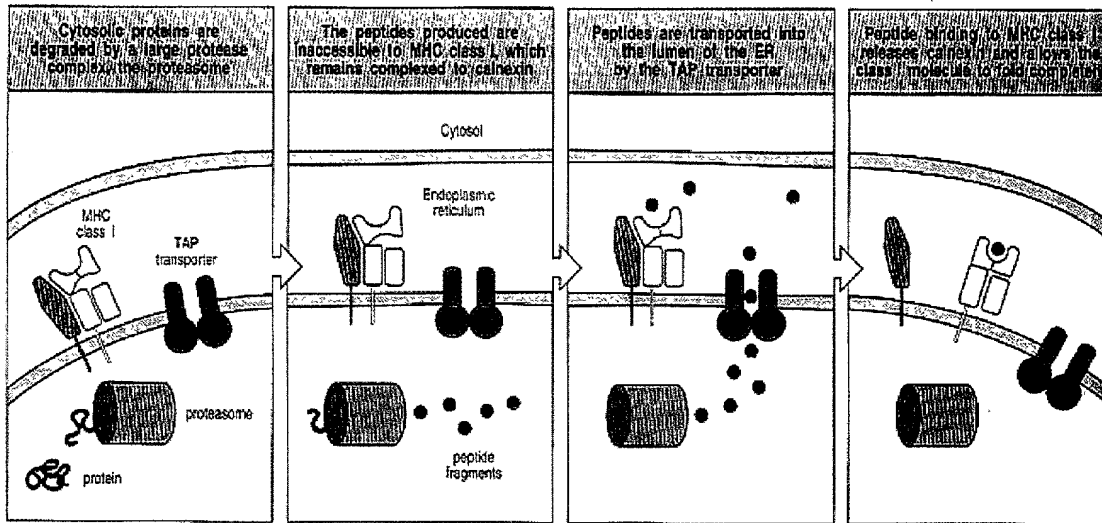
**FIG. 35**



**FIG. 36**

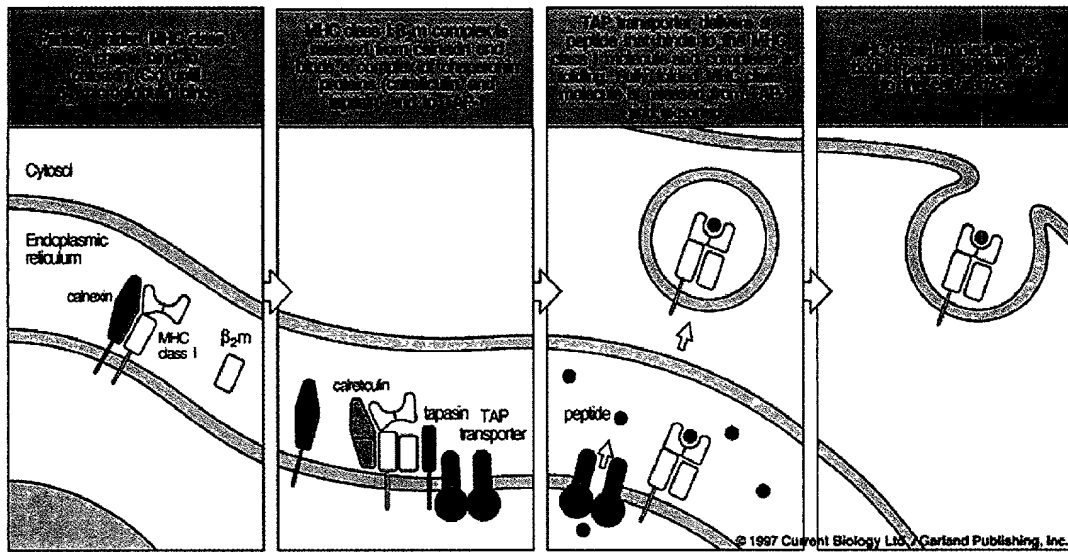


**FIG. 37**

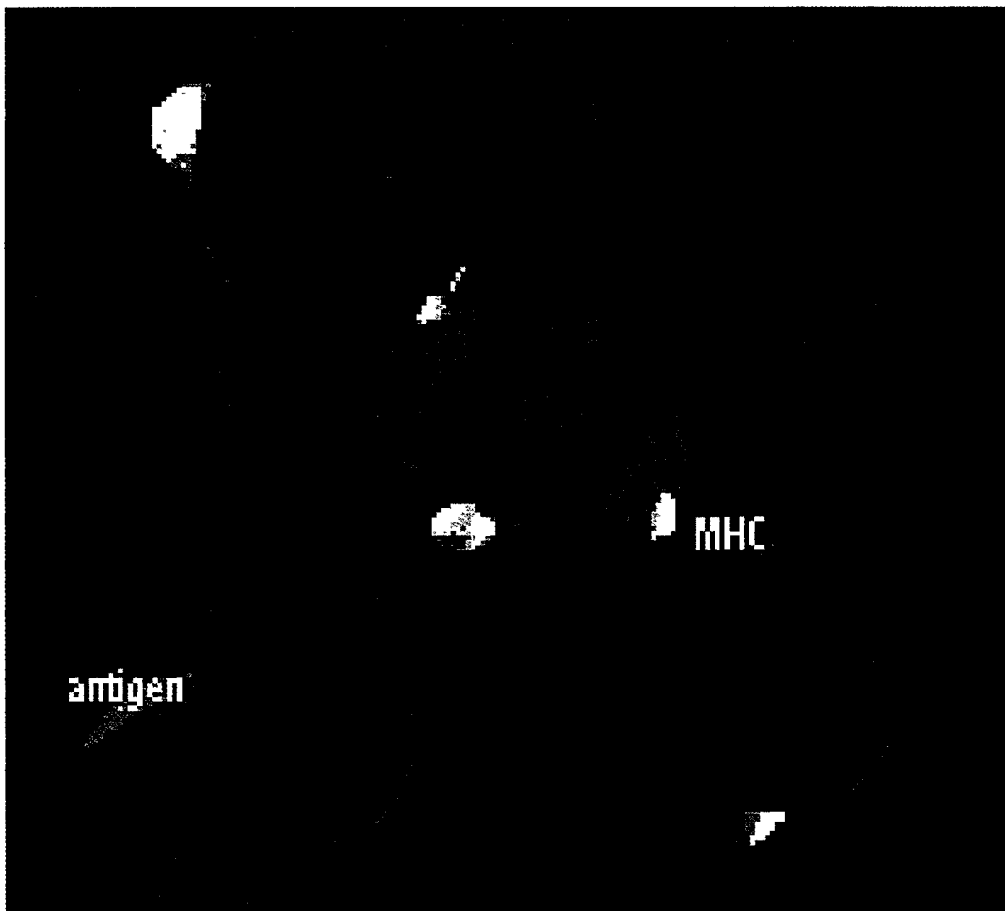


**FIG. 38**



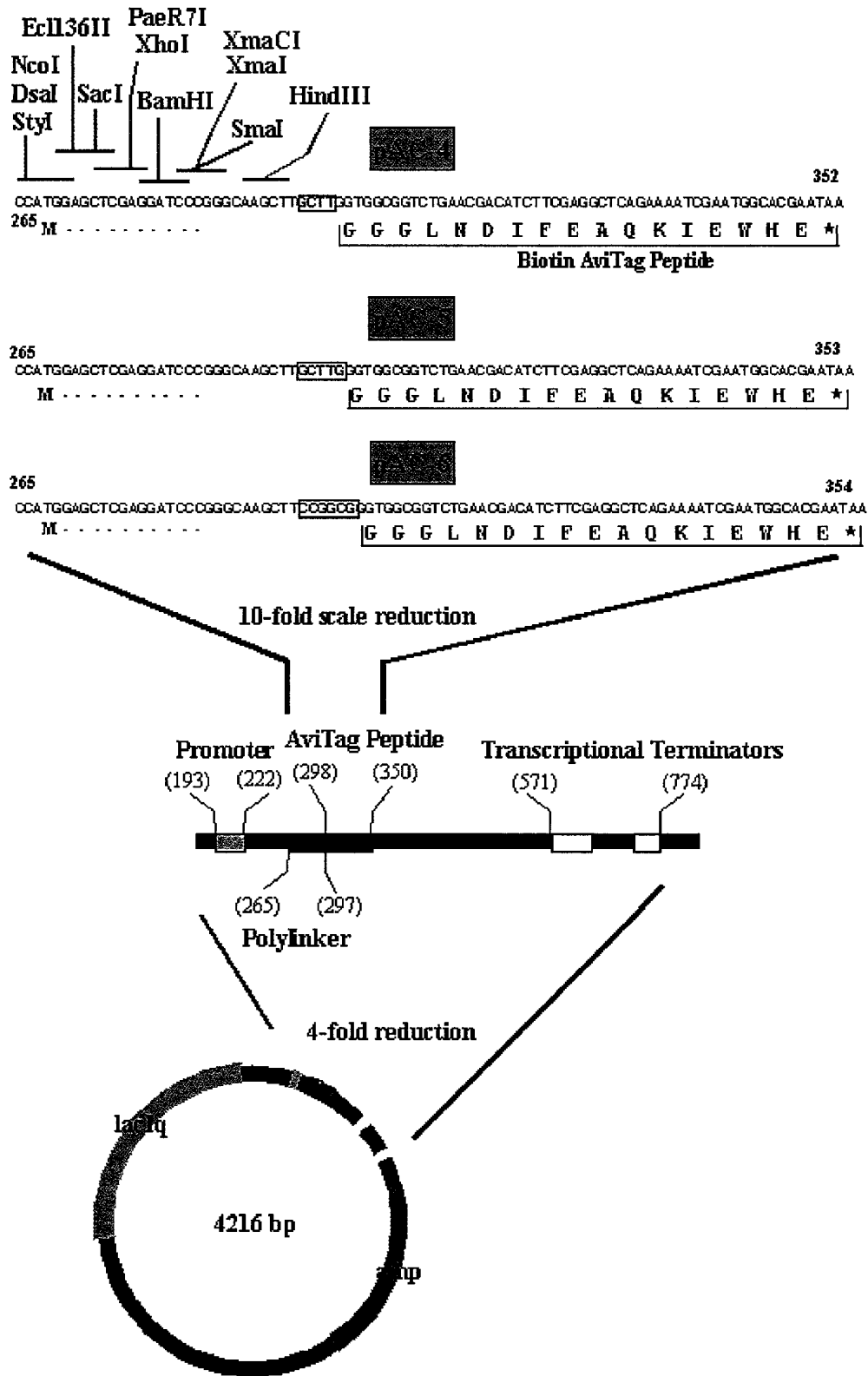


**FIG. 39**



**FIG. 40**

FIG. 41



1000 900 800 700 600 500 400 300 200 100 0

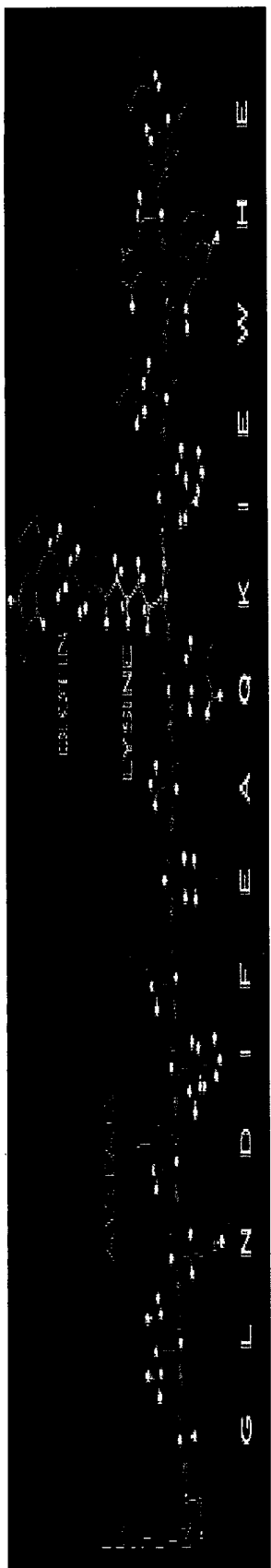
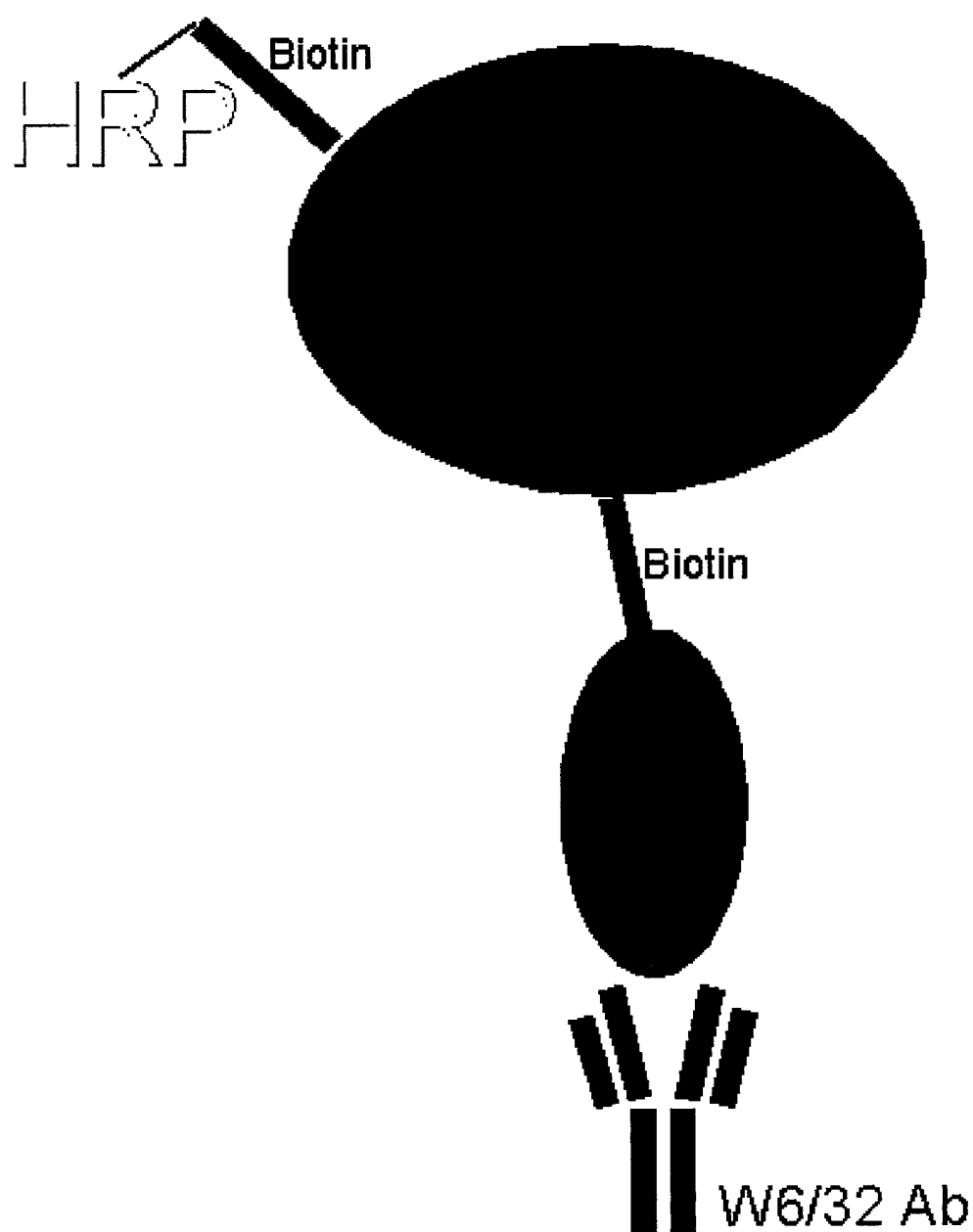


FIG. 42

**FIG. 43**



SHLA-B\*0702 PRODUCTION BY T2 TRANSFECTANTS AFTER PEPTIDE PULSING

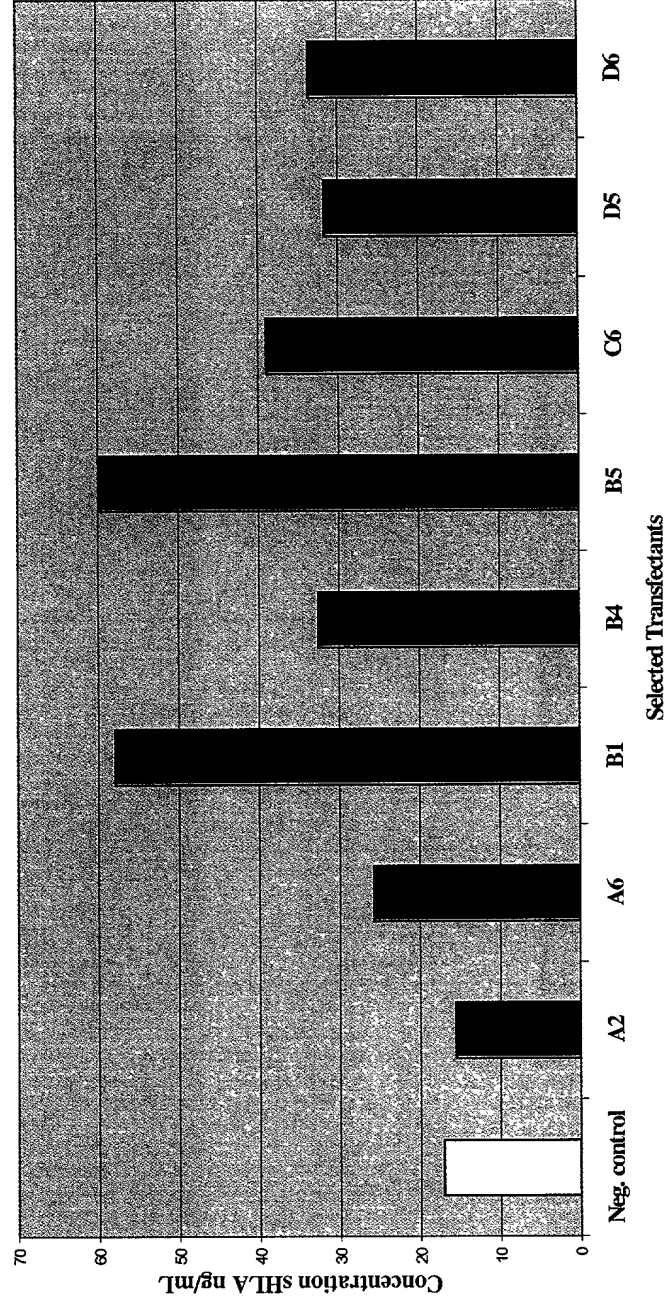
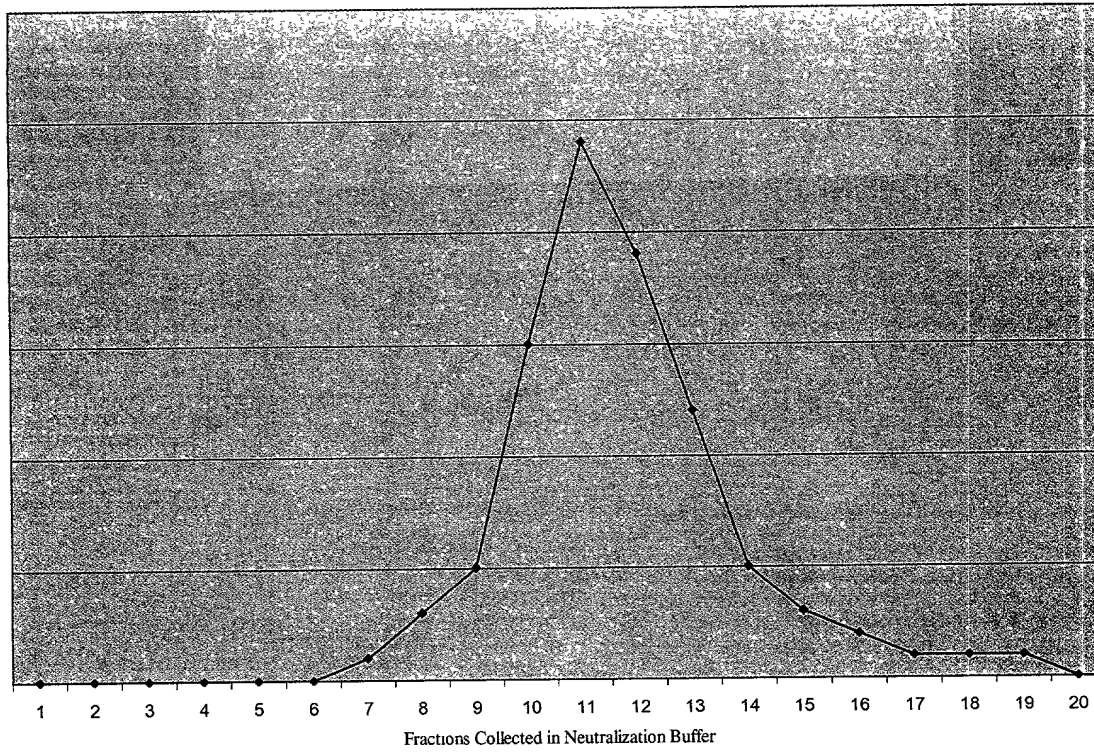


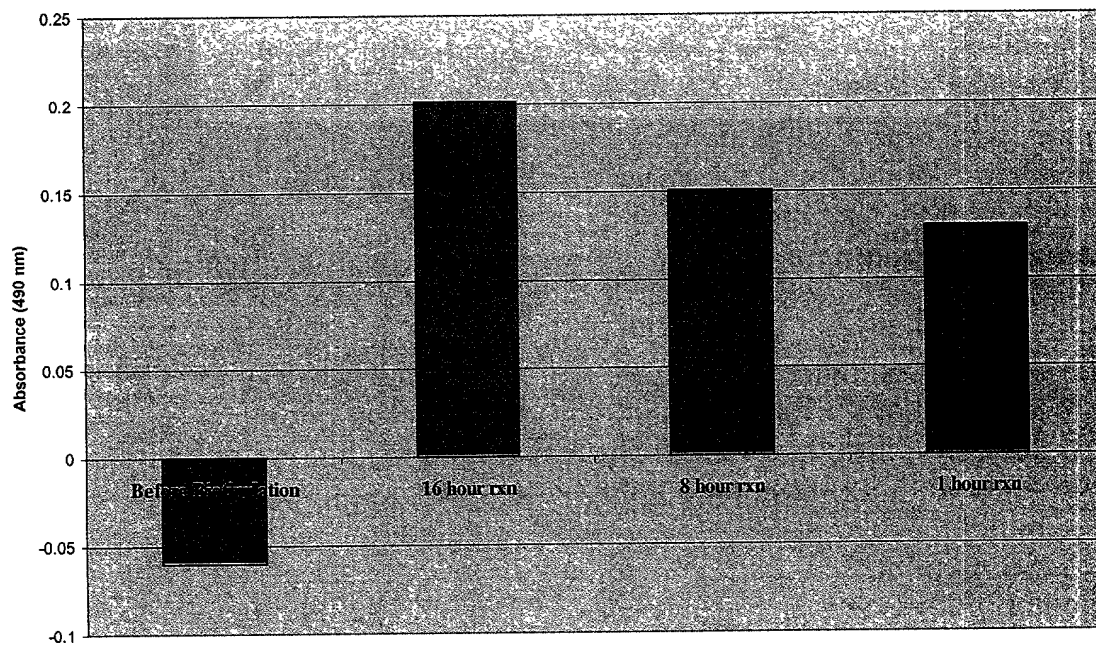
FIG. 44

sHLA Purification Elution Curve



**FIG. 45**

**ASSAY CONFIRMING BIOTINYLATION**  
Varying Reaction Times to Maximize Biotinylation Efficiency



**FIG. 46**



SEPARATION OF BIOTINYLATED CLASS I FROM FREE BIOTIN

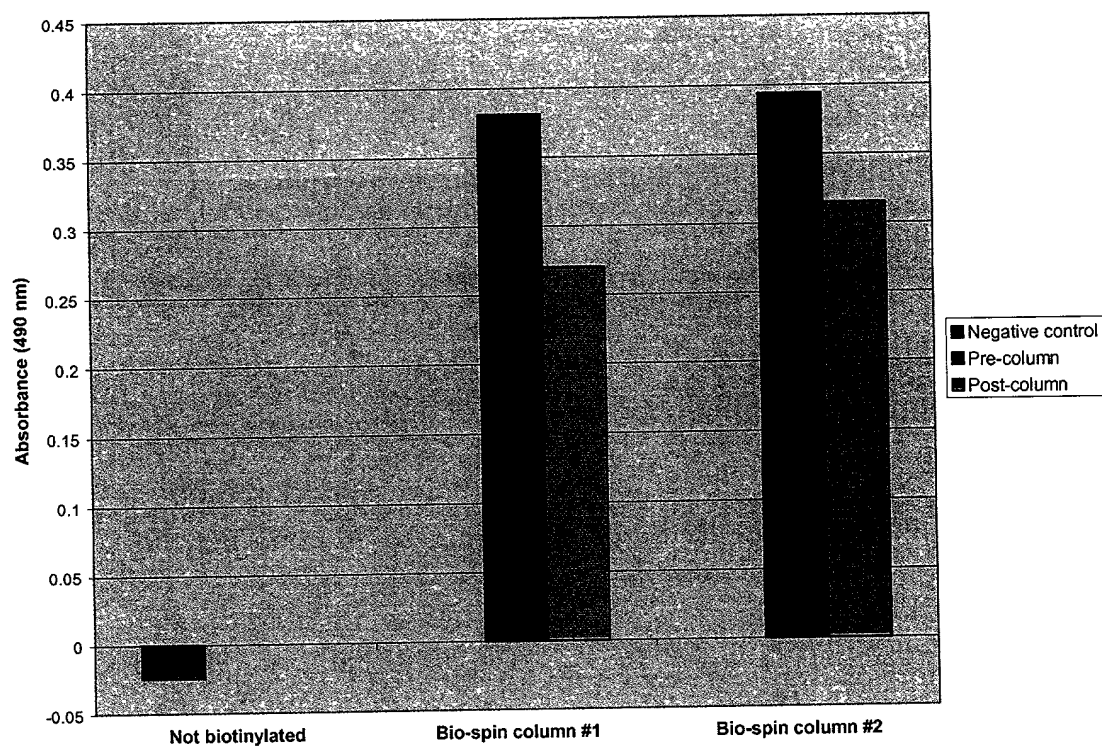


FIG. 47

| <i>consensus</i> | 24 | 45 | 46 | 63 | 67 | 116 | 156 | 166 | 167 | <i>ethnicity</i>          |
|------------------|----|----|----|----|----|-----|-----|-----|-----|---------------------------|
|                  | A  | M  | A  | E  | S  | S   | W   | E   | W   |                           |
| B*1512           | -  | -  | -  | -  | -  | -   | -   | D   | G   | Thai                      |
| B*1508           | -  | -  | -  | N  | F  | -   | -   | -   | -   | Iranian/Indian/Amerindian |
| B*1501           | -  | -  | -  | -  | -  | -   | -   | -   | -   | Caucasian                 |
| B*1503           | S  | E  | E  | -  | -  | -   | L   | -   | -   | Black                     |
| B*1518           | S  | E  | E  | N  | C  | -   | L   | -   | -   | Indian                    |
| B*1510           | S  | E  | E  | N  | C  | Y   | L   | -   | -   | Black                     |

TABLE 1

| primer        | type   | sequence (5'→3')                      |
|---------------|--|---------------------------------------|
| HLA5UT        | PCR (5'; inserts <i>SalI</i> site)   | GGCGTCGACGGGACTCAGAATCTCCCCAGACGCCGAG |
| sHLA3TM       | PCR (3'; inserts stop codon and <i>HindIII</i> site)                             | CCGCAAGCTT <b>TCA</b> TCTCAGGGTGAG    |
| 5PXI          | PCR (5'; inserts <i>XbaI</i> site)   | GGGCTCTAGAGGACTCAGAATCTCCCCAGACGCCGAG |
| 3PEI          | PCR (3'; inserts stop codon and <i>EcoRI</i> site)                               | CCGCGAATTC <b>TCA</b> TCTCAGGGTGAG    |
| M13 universal | sequencing (mp18, end through $\alpha_3$ )<br>(mp19, leader through $\alpha_2$ ) | TGTAAAACGACGGCCAGT                    |
| 3S            | sequencing ( $\alpha_2$ through $\alpha_3$ )                                     | CGGCAAGGATTACATCGCCCTG                |
| JD3S          | sequencing ( $\alpha_3$ through end)   | CCCCATCGTGGGCAFCGTTG                  |
| 3N            | sequencing ( $\alpha_2$ through leader)  | CAGGGCGATGTAATCCTTGCCG                |
| 4N            | sequencing ( $\alpha_3$ through $\alpha_2$ )                                     | GCCAGGTCAGTGTGATCTCCGC                |
| T7 promoter   | sequencing (T7 promoter forward priming site)                                    | TAATACGACTCACTATAGGG                  |
| pcDNA3.1/BGH  | sequencing (BGH reverse priming site)  | TAGAAGGCACAGTCGAGG                    |

TABLE 2

| allele | # fractions | P2 extras | P9 extras | >9 cycles? |
|--------|-------------|-----------|-----------|------------|
| B*1501 | 7           | P         | -         | yes (14)   |
| B*1508 | 8           | QVKRS     | IVMQ      | yes (14)   |
| B*1503 | 3           | P         | MNL       | yes (14)   |
| B*1510 | 3           | PR        | MIY       | yes (14)   |

**TABLE 3**

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| ligand  | source protein                                      | allele(s) characterized from         |
|---|---|--------------------------------------|
| <b><i>HLA ligands</i></b>                                   |   |                                      |
| VGYYDDTQF   | HLA-I $\alpha$ (49-57)                              | B*1501, 1508                         |
| IAGYYDDTQF  | HLA-I $\alpha$ (47-57)                              | B*1501, B*1512                       |
| IKADHVSTY   | HLA-II DP $\alpha$ (32-40)                          | B*1503                               |
| GSHSMRYF  | HLA-I $\alpha$ (25-32)                              | B*1503                               |
| <b><i>Replication/transcription/translation ligands</i></b> |   |                                      |
| GQRKGAGSVF  | 60S ribosomal protein L8 (7-16)                     | B*1501, 1503                         |
| AQAESLRY  | 40S ribosomal protein S3 (100-107)                  | B*1501                               |
| GKVRTDITY   | 40S ribosomal protein S4 (73-81)                    | B*1503                               |
| SHAQTVVL  | 40S ribosomal protein S27 (48-55)                   | B*1510                               |
| SQFGGGSQY   | eIF3-p66 (61-69)                                    | B*1501, 1503, 1508, B*1512           |
| VQGPVGTDF   | zinc finger transcription factor (296-304)          | B*1501                               |
| APPPPPPPP   | transcription factor ZFM1 (581-589)                 | B*1501                               |
| YQHTGAVL  | spleen mitotic checkpoint BUB3 (53-60)              | B*1510                               |
| AHGRKMSKSL  | valyl-tRNA synthetase (859-868)                     | B*1510                               |
| LPHQPLATY   | Oct-binding factor 1 (52-60)                        | B*1508                               |
| AKYSTPATL   | probable ATP-dependent RNA helicase DDX10 (280-288) | B*1503                               |
| AKAGITTTL   | DNA replication licensing factor MCM5 (470-478)     | B*1503                               |
| TQAPGNPVL   | splicing factor U2AF large chain (179-187)          | B*1510                               |
| SHQRQLLL  | Kin17 (49-56)                                       | B*1510                               |
| NQFQALLQY   | polypyrimidine tract-binding protein (220-228)      | B*1512                               |
| <b><i>Biosynthetic/degradative modification ligands</i></b> |   |                                      |
| FVSNHAY   | aldolase A (358-364)                                | B*1501, 1508                         |
| ILGPPGSVY   | ubiquitin-protein ligase (83-91)                    | B*1501, B*1502, 1508, B*1512         |
| YMIDPSGVSY  | proteasome subunit C8 (150-159)                     | B*1501, B*1502, 1508, B*4601, B*1512 |
| NHAIVSTSV   | 26S protease (S4) regulatory subunit (741-749)      | B*1510                               |
| IHTPENPVI   | lanosterol 14- $\alpha$ demethylase (488-496)       | B*1510                               |

**TABLE 4**

|                                       |  |                        |
|---------------------------------------|--|------------------------|
| AHSNLA SVL                            | O-linked GlcNAc transferase (237-245)  | B*1510                 |
| <b>Signalling/modulatory ligands</b>  |  |                        |
| VVAPIT TGY                            | calcyclin binding protein (63-71)  | B*1501, 1508           |
| GHSPPT SSL                            | tyrosine-protein kinase JAK3 (491-499)                                       | B*1510                 |
| LPPPPPP PP                            | Fas antigen ligand (54-62)   | B*1503                 |
| NHANGL TL                             | serine/threonine protein phosphatase PP2A ( $\alpha$ and $\beta$ ) (229-236) | B*1510                 |
| <b>Transporter/chaperone ligands</b>  |  |                        |
| EHVASS PAL                            | 13S Golgi transport complex 90 kD subunit (741-749)                          | B*1510                 |
| HHS DGSVSL                            | tapasin (354-362)  | B*1509, B*1510         |
| QPGPQ IVY                             | GABA/noradrenaline transporter (261-268)                                     | B*1503                 |
| <b>Structural/cytokinesis ligands</b> |  |                        |
| NMNDLV SEY                            | tubulin $\beta$ chain (414-422)  | B*1508                 |
| THTQPG VQL                            | septin 2 homolog (70-78)   | B*1509, B*1510         |
| SHANSA VVL                            | $\beta$ -adaptin (249-257)   | B*1509, B*1510         |
| <b>Unknown function ligands</b>       |  |                        |
| GQYPTQ PTY                            | KIAA0058 (5-13); like <i>Mus musculus</i> proline-rich protein               | B*1503                 |
| VKVIQQ ESY                            | mammary tumor-associated protein INT6 (278-286)                              | B*1503                 |
| AKYPHV EDY                            | Ki nuclear autoantigen (207-215)   | B*1503                 |
| AMNPTNT VF                            | heat shock cognate 71 kD protein (60-68)                                     | B*1503                 |
| CPLSC FT                              | human HTGS database  | B*1501, B*1503, B*1508 |
| MPHSGY GF                             | human EST  | B*1508                 |
| CHSAF AL                              | human HTGS database  | B*1510                 |
| LHLLT LEA                             | human EST  | B*1510                 |
| KNANLV QLY                            | human EST  | B*1512                 |

**TABLE 4 CONT'D.**

| fraction | ion for MS/MS | derived peptide sequence |
|----------|---------------|--------------------------|
| 7        | 504.1 (+2)    | H M S G Z P T S Y        |
| 7        | 549.2 (+2)    | H N Z A A H Z E Y        |
| 8        | 526.0 (+2)    | H A A X Y S Z V Y        |
| 10       | 484.3 (+2)    | Y Q S D H R Y            |
| 11       | 424.3 (+2)    | H X S T Z D F            |
| 11       | 464.3 (+2)    | H A P P T D P P P        |
| 11       | 550.0 (+2)    | H G P A N R D S V F      |
| 11       | 563.3 (+2)    | F P Y P T D P Z Y        |
| 12       | 531.2 (+2)    | Z N A N X V Z X Y        |
| 14       | 585.6 (+2)    | R S F X X E N E Y        |
| 16       | 488.7 (+2)    | H M Z N P T S Y          |
| 16       | 661.9 (+2)    | Y V X F - - - V Y        |
| 17       | 577.6 (+2)    | R S M X R C P E Y        |
| 18       | 523.0 (+2)    | - - F Y T A Z T Y        |
| 20       | 582.4 (+2)    | M Y N C N E X D Y        |
| 25       | 562.8 (+2)    | N Q F Q A L L Q Y        |

**TABLE 5**

| ALLELE           | 7 | 9 | 24 | 25 | 26 | 34 | 35 | 36 | 45 | 62 | 63 | 66 | 67 | 70 | 99 | 159 | 163 | 167 | P2 MOTIF<br>(dominant/str<br>ong) |
|------------------|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----------------------------------|
| <i>consensus</i> | Y | Y | A  | V  | G  | V  | R  | F  | M  | R  | E  | I  | S  | N  | Y  | Y   | L   | W   |                                   |
| B*1508           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | N  | -  | F  | -  | -  | -   | -   | -   | PA                                |
| B*1513           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | N  | -  | -  | -  | -  | -   | -   | -   | ILQVP                             |
| B*1502           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | N  | -  | -  | -  | -  | -   | -   | -   | LVQP                              |
| B*1501           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -   | -   | -   | QMLV                              |
| B*1512           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -   | -   | G   | QLM                               |
| B*1503           | - | - | S  | -  | -  | -  | -  | -  | E  | -  | -  | -  | -  | -  | -  | -   | -   | -   | QXM                               |
| B*1518           | - | - | S  | -  | -  | -  | -  | -  | E  | -  | N  | -  | C  | -  | -  | -   | -   | -   | H                                 |
| B*1509           | - | - | S  | -  | -  | -  | -  | -  | E  | -  | N  | -  | C  | -  | -  | -   | -   | -   | H                                 |
| B*1510           | - | - | S  | -  | -  | -  | -  | -  | E  | -  | N  | -  | C  | -  | -  | -   | -   | -   | H                                 |
| B*1517           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | N  | M  | S  | -  | -   | -   | -   | TS                                |
| B*1516           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | N  | M  | S  | -  | -   | -   | -   | T                                 |
| B*4601           | - | - | -  | -  | -  | -  | -  | -  | -  | -  | -  | K  | Y  | Q  | -  | -   | -   | -   | MI                                |

Table 6



| ALLE<br>LE                 | 7<br>0 | 7<br>3 | 7<br>4 | 7<br>6 | 7<br>7 | 8<br>0 | 8<br>1 | 8<br>4 | 9<br>5 | 9<br>6 | 9<br>7 | 1<br>1 | 1<br>1 | 1<br>1 | 1<br>2 | 1<br>2 | 1<br>4 | 1<br>4 | 1<br>4 | 1<br>4 | P9<br>MOTIF<br><br>(dominan<br>t/strong) |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| <i>cons<br/>ensu<br/>s</i> | N      | T      | Y      | E      | S      | N      | L      | Y      | L      | Q      | R      | D      | S      | Y      | Y      | I      | I      | T      | K      | W      |  |
| B*1<br>502                 | -      | -      | -      | -      | -      | -      | -      | -      | I      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YFM                                      |
| B*1<br>501                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*1<br>503                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*1<br>508                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*1<br>512                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*1<br>518                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*4<br>601                 | Q      | -      | D      | V      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*1<br>517                 | S      | -      | -      | -      | N      | I      | A      | -      | -      | -      | -      | H      | D      | -      | -      | -      | -      | -      | -      | -      | YF                                       |
| B*1<br>516                 | S      | -      | -      | -      | N      | I      | A      | -      | W      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | Y  |
| B*1<br>509                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | N      | Y      | -      | -      | -      | -      | -      | -      | -      | LF                                       |
| B*1<br>510                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | Y      | -      | -      | -      | -      | -      | -      | -      | LF                                       |
| B*1<br>513                 | -      | -      | -      | -      | N      | I      | A      | -      | I      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | W  |

**TABLE 7**

| fraction | ion for MS/MS | derived peptide sequence                      |
|----------|---------------|---|
| 9        | 490.3 (+2)    | A G G Z P A T P <b>P</b> A X                  |
| 9        | 513.1 (+2)    | S H Z G C V Z <b>P</b> A V                    |
| 10       | 433.8 (+2)    | G H D P D S <b>P</b> A A                      |
| 10       | 455.4 (+2)    | E H V A S S <b>P</b> A L                      |
| 10       | 482.6 (+2)    | M C Z - G M <b>P</b> A X                      |
| 10       | 482.8 (+2)    | G H G A N N D <b>P</b> A X                    |
| 10       | 495.7 (+2)    | X H S Z P A G <b>P</b> A X                    |
| 11       | 448.9 (+2)    | M H A D N <b>P</b> V X                        |
| 11       | 482.8 (+2)    | G H <u>C</u> P R N <b>P</b> A X               |
| 11       | 495.7 (+2)    | X H S G A P Z <b>A</b> P X                    |
| 11       | 516.7 (+2)    | X H D T <u>E</u> H <b>A</b> P X               |
| 12       | 448.4 (+2)    | T Q A P G N <b>P</b> V L                      |
| 12       | 460.3 (+2)    | T Z A <u>G</u> <u>C</u> <u>M</u> <b>V</b> P X |
| 13       | 464.8 (+2)    | M V - - H <b>P</b> V X                        |
| 14       | 456.7 (+2)    | A H S V P S <b>P</b> A F                      |
| 14       | 477.7 (+2)    | M H T - - <b>P</b> A P V                      |
| 14       | 482.8 (+2)    | P G A A V <b>V</b> P S X                      |
| 15       | 510.1 (+2)    | I H T P E N <b>P</b> V I                      |
| 16       | 456.7 (+2)    | S H <u>D</u> <u>G</u> <u>S</u> <b>V</b> P T X |
| 16       | 522.7 (+2)    | - - - - - <b>P</b> V X                        |
| 16       | 523.3 (+2)    | M A H S - - <b>P</b> V F                      |
| 17       | 523.2 (+2)    | - H - - - - <b>P</b> V F                      |
| 18       | 474.8 (+2)    | M X <u>G</u> <u>X</u> S F <b>P</b> A X        |
| 18       | 491.2 (+2)    | V H T C V N <b>P</b> V X                      |
| 18       | 515.8 (+2)    | E W <u>H</u> <u>Y</u> <b>P</b> V S X          |
| 19       | 496.6 (+2)    | <u>E</u> T P <u>E</u> H <b>A</b> P V X        |

**TABLE 8**

| side chain                                       | P1     | P2     | P3     | P4     | C <sup>3</sup> | C <sup>2</sup> | C <sup>1</sup> | C-term | side chain       |
|--|--------|--------|--------|--------|----------------|----------------|----------------|--------|------------------|
| G  | -      | -      | 11.90% | 10.32% | 11.90%         | -              | -              | -      | G                |
| P  | -      | 10.32% | -      | -      | -              | -              | -              | -      | P                |
| C  | -      | -      | -      | -      | -              | -              | -              | -      | C                |
| A  | 18.25% | 11.11% | 11.90% | -      | -              | -              | 10.32%         | -      | A                |
| V  | 11.90% | -      | -      | -      | -              | 10.32%         | -              | -      | V                |
| F  | -      | -      | -      | -      | -              | -              | -              | 26.19% | F                |
| M  | -      | -      | -      | -      | -              | -              | -              | -      | M                |
| I/L  | 13.49% | 13.49% | -      | -      | -              | -              | -              | -      | I/L              |
| S  | -      | -      | -      | -      | -              | -              | -              | -      | S                |
| T  | -      | -      | -      | -      | -              | 13.49%         | -              | -      | T                |
| Y  | -      | -      | -      | -      | -              | -              | -              | 63.49% | Y                |
| N  | -      | -      | -      | -      | -              | -              | -              | -      | N                |
| W  | -      | -      | -      | -      | -              | -              | -              | -      | W                |
| Q/K  | -      | 24.60% | -      | -      | -              | -              | 15.87%         | -      | Q/K              |
| H  | -      | -      | -      | -      | -              | -              | -              | -      | H                |
| R  | -      | -      | -      | -      | -              | -              | -              | -      | R                |
| D  | -      | -      | -      | -      | -              | -              | -              | -      | D                |
| E  | -      | -      | -      | -      | -              | -              | 10.32%         | -      | E                |
| N value  | 13.64  | 19.52  | 3.80   | 0.32   | 1.90           | 3.81           | 6.51           | 69.68  | C value          |
| N <sub>sum</sub>                                 | 37.28  |        |        |        | 81.90          |                |                |        | C <sub>sum</sub> |
| B*1501 N <sub>sum</sub> /C <sub>sum</sub> = 0.46 |        |        |        |        |                |                |                |        |                  |

TABLE 9



| side chain       | P1     | P2     | P3     | P4   | C <sup>3</sup>                                   | C <sup>2</sup> | C <sup>1</sup> | C-term | side chain       |
|------------------|--------|--------|--------|------|--|----------------|----------------|--------|------------------|
| G                | -      | -      | -      | -    | 10.42%   | -              | -              | -      | G                |
| P                | -      | 27.08% | -      | -    | -  | -              | -              | -      | P                |
| C                | -      | -      | -      | -    | -  | -              | -              | -      | C                |
| A                | -      | 16.67% | 13.54% | -    | -  | -              | 14.58%         | -      | A                |
| V                | -      | -      | -      | -    | -  | 11.46%         | 12.50%         | -      | V                |
| F                | -      | -      | -      | -    | -  | -              | -              | 23.96% | F                |
| M                | -      | -      | -      | -    | -  | -              | -              | -      | M                |
| I/L              | 11.46% | -      | -      | -    | -  | -              | -              | -      | I/L              |
| S                | -      | -      | -      | -    | -  | 11.46%         | 11.46%         | -      | S                |
| T                | 10.42% | -      | -      | -    | -  | -              | 17.71%         | -      | T                |
| Y                | 11.46% | -      | -      | -    | -  | -              | -              | 66.67% | Y                |
| N                | -      | -      | -      | -    | -  | -              | -              | -      | N                |
| W                | -      | -      | -      | -    | -  | -              | -              | -      | W                |
| Q/K              | -      | -      | -      | -    | 12.50%   | -              | -              | -      | Q/K              |
| H                | -      | -      | -      | -    | -  | -              | -              | -      | H                |
| R                | -      | -      | -      | -    | -  | -              | -              | -      | R                |
| D                | -      | -      | -      | -    | -  | -              | -              | -      | D                |
| E                | -      | -      | -      | -    | -  | -              | 10.42%         | -      | E                |
| N value          | 3.34   | 23.75  | 3.54   | 0.00 | 2.92   | 2.92           | 16.67          | 70.63  | C value          |
| N <sub>sum</sub> | 30.63  |        |        |      | 93.14  |                |                |        | C <sub>sum</sub> |
|                  |        |        |        |      | B*1508 N <sub>sum</sub> /C <sub>sum</sub> = 0.33 |                |                |        |                  |

## TABLE 11

| side chain                                       | P1     | P2     | P3     | P4     | C <sup>1</sup> | C <sup>2</sup> | C <sup>3</sup> | C-term | side chain       |
|--|--------|--------|--------|--------|----------------|----------------|----------------|--------|------------------|
| G  | 10.57% | -      | 10.57% | 10.57% | -              | -              | 11.38%         | -      | G                |
| P  | -      | -      | -      | 12.20% | -              | 28.46%         | -              | -      | P                |
| C  | -      | -      | -      | -      | -              | -              | -              | -      | C                |
| A  | -      | -      | 19.51% | -      | -              | -              | -              | 14.63% | A                |
| V  | -      | -      | -      | -      | -              | -              | -              | 22.76% | V                |
| F  | -      | -      | -      | -      | -              | -              | -              | -      | F                |
| M  | 11.38% | -      | -      | -      | -              | -              | -              | -      | M                |
| I/L  | 12.20% | -      | -      | -      | -              | -              | -              | 12.20% | I/L              |
| S  | 11.38% | -      | -      | -      | -              | -              | -              | 15.45% | S                |
| T  | -      | -      | -      | -      | -              | -              | -              | -      | T                |
| Y  | -      | -      | -      | -      | -              | -              | -              | -      | Y                |
| N  | -      | -      | -      | -      | -              | -              | -              | -      | N                |
| W  | -      | -      | -      | -      | -              | -              | -              | -      | W                |
| Q/K  | -      | -      | -      | -      | -              | -              | -              | -      | Q/K              |
| H  | -      | 58.54% | -      | -      | -              | -              | -              | -      | H                |
| R  | -      | -      | -      | -      | -              | -              | -              | -      | R                |
| D  | -      | -      | -      | -      | -              | -              | -              | -      | D                |
| E  | -      | -      | -      | -      | -              | -              | -              | -      | E                |
| N value  | 5.53   | 48.54  | 10.08  | 2.77   | 1.38           | 18.46          | 25.04          | 61.3   | C value          |
| N <sub>sum</sub>                                 | 66.92  |        |        |        | 106.18         |                |                |        | C <sub>sum</sub> |
| B*1510 N <sub>sum</sub> /C <sub>sum</sub> = 0.63 |        |        |        |        |                |                |                |        |                  |

TABLE 12

100% of the total value of the goods is accounted for by the top 100 products

| side chain                                       | P1     | P2     | P3     | P4     | C <sup>3</sup> | C <sup>2</sup> | C <sup>1</sup> | C-term | side chain       |
|--|--------|--------|--------|--------|----------------|----------------|----------------|--------|------------------|
| G  | -      | -      | -      | -      | -              | -              | -              | -      | G                |
| P  | -      | -      | -      | 13.33% | -              | -              | -              | -      | P                |
| C  | -      | -      | -      | -      | -              | -              | -              | -      | C                |
| A  | -      | 16.67% | -      | 13.33% | -              | -              | -              | -      | A                |
| V  | -      | -      | -      | -      | -              | -              | 16.67%         | -      | V                |
| F  | -      | -      | 16.67% | -      | -              | -              | -              | 16.67% | F                |
| M  | -      | 13.33% | -      | -      | -              | -              | -              | -      | M                |
| I/L  | -      | 13.33% | 13.33% | 16.67% | -              | -              | -              | -      | I/L              |
| S  | -      | -      | -      | -      | -              | 13.33%         | -              | -      | S                |
| T  | -      | -      | -      | -      | -              | 13.33%         | -              | -      | T                |
| Y  | 13.33% | -      | -      | -      | -              | -              | -              | 80.00% | Y                |
| N  | -      | -      | -      | -      | -              | -              | -              | -      | N                |
| W  | -      | -      | -      | -      | -              | -              | -              | -      | W                |
| Q/K  | -      | 16.67% | 13.33% | -      | -              | 20.00%         | 13.33%         | -      | Q/K              |
| H  | 23.33% | -      | -      | -      | -              | -              | -              | -      | H                |
| R  | -      | -      | -      | -      | -              | -              | -              | -      | R                |
| D  | -      | -      | -      | 13.33% | 16.67%         | -              | -              | -      | D                |
| E  | -      | -      | -      | -      | -              | -              | 16.67%         | -      | E                |
| N value  | 16.66  | 20.00  | 13.33  | 16.66  | 6.67           | 16.66          | 16.67          | 76.67  | C value          |
| N <sub>sum</sub>                                 | 66.65  |        |        |        | 116.67         |                |                |        | C <sub>sum</sub> |
| B*1512 N <sub>sum</sub> /C <sub>sum</sub> = 0.57 |        |        |        |        |                |                |                |        |                  |

TABLE 13

| fraction | ion for MS/MS | derived peptide sequence | alleles overlapping         |
|----------|---------------|--------------------------|-----------------------------|
| 6        | 398.2 (+3)    | - - W D R H T X F        | B*1501/B*1508               |
| 6        | 448.2 (+2)    | - - - - - Y T            | B*1501/B*1508               |
| 7        | 418.7 (+2)    | A Q F A S G A G Z        | B*1501/B*1503               |
| 8        | 402.2 (+2)    | - G - - C D Y            | B*1501/B*1503               |
| 8        | 418.7 (+2)    | G S H F G V A Y          | B*1501/B*1508               |
| 8        | 516.7 (+2)    | N Q Z H G S A E Y        | B*1501/B*1503/B*1508/B*1512 |
| 8        | 642.7 (+2)    | P M N D W X M T Z T Y    | B*1501/B*1512               |
| 9        | 331.4 (+3)    | A P M A R G Z Y          | B*1501/B*1503               |
| 9        | 418.7 (+2)    | F V S N H A Y            | B*1501/B*1508               |
| 9        | 433.2 (+2)    | N P P A Z Z P N          | B*1501/B*1503               |
| 9        | 437.0 (+2)    | T G - - - A Y            | B*1501/B*1508               |
| 9        | 441.2 (+2)    | - Q - D P P P D M Z Y    | B*1501/B*1503               |
| 9        | 446.6 (+2)    | G Q Z Z A V D F          | B*1501/B*1503               |
| 9/10     | 465.2 (+2)    | S Q F G G G S Q Y        | B*1501/B*1503/B*1508/B*1512 |
| 9        | 476.2 (+2)    | S Q F D H V T Y          | B*1501/B*1508               |
| 9        | 578.0 (+2)    | T P X G E P Y Z S Y      | B*1501/B*1503/B*1508        |
| 10       | 398.3 (+2)    | X A N - - V T            | B*1501/B*1508               |
| 10       | 456.8 (+2)    | C P L S C F T            | B*1501/B*1503/B*1508        |
| 10       | 509.0 (+2)    | F L Z A M Z S T Y        | B*1501/B*1508/B*1512        |
| 10       | 532.0 (+2)    | T V X D S Z T H Y        | B*1501/B*1508/B*1512        |
| 13       | 503.6 (+2)    | G Q R K G A G S V F      | B*1501/B*1503               |
| 14       | 460.7 (+2)    | V V A P I T T G Y        | B*1501/B*1508               |
| 14       | 475.1 (+2)    | V V A C V - - Y          | B*1501/B*1508               |
| 14       | 525.3 (+2)    | P L A - N - H T Y        | B*1501/B*1508               |
| 15       | 514.2 (+2)    | F Q A R X T E Y          | B*1501/B*1508               |
| 16       | 522.0 (+2)    | V G Y V D D T Q F        | B*1501/B*1508               |
| 17       | 351.3 (+3)    | A A F C G - - - X V      | B*1501/B*1508               |
| 17       | 408.7 (+2)    | Y L H - - E T            | B*1501/B*1508               |
| 17/18    | 451.4 (+2)    | I L G P P G S V Y        | B*1501/B*1508/B*1512        |
| 17       | 462.4 (+2)    | X L G D V N M Y          | B*1501/B*1508               |
| 17       | 507.0 (+2)    | - - - - X V E F          | B*1501/B*1508               |
| 17       | 519.2 (+2)    | T A R V X S V E Y        | B*1501/B*1508               |
| 18       | 565.7 (+2)    | A E F W A C Z X Y        | B*1501/B*1503               |
| 18/19    | 566.2 (+2)    | Y M I D P S G V S Y      | B*1501/B*1508/B*1512        |
| 19/20    | 560.0 (+2)    | X V E X T T D Y Y        | B*1501/B*1512               |
| 20/21    | 448.2 (+2)    | A A G X G P T F Y        | B*1501/B*1512               |
| 20/21    | 614.0 (+2)    | I A V G Y V D D T Q F    | B*1501/B*1512               |
| 21/22    | 507.2 (+2)    | V A E V X F V G Y        | B*1501/B*1512               |
| 21/22    | 557.2 (+2)    | Y N R W S X E F          | B*1501/B*1512               |
| 22/23    | 510.8 (+2)    | A L M P - - X N Y        | B*1501/B*1512               |

**TABLE 14**



| allele | ion overlaps<br>collided | positive overlaps | overlap<br>frequency |
|--------|--------------------------|-------------------|----------------------|
| B*1512 | 20                       | 14                | <b>70%</b>           |
| B*1508 | 286                      | 25                | <b>9%</b>            |
| B*1503 | 88                       | 12                | <b>14%</b>           |
| B*1510 | 26                       | 0                 | <b>0%</b>            |

**TABLE 15**

| motif P2/P9 |           | + length variation only | + P2 variation only |           |           |
|-------------|-----------|-------------------------|---------------------|-----------|-----------|
| DLASMLNRY   | (64-72)   | MQLLCVF                 | (1-7)               | DIEGHASHY | (28-36)   |
| MLNRYKLIY   | (68-76)   | HLDIEGHASHY             | (26-36)             | SAPLEKQLF | (123-131) |
| PLEKQLFYY   | (125-133) | MLSAPLEKQLF             | (121-131)           | APLEKQLFY | (124-132) |
| YQLRCHLSY   | (149-157) | PLEKQLF                 | (125-131)           | LPNTRPHSY | (138-146) |
| ALSINGDKF   | (159-167) | PLEKQLFY                | (125-132)           | NTRPHSYVF | (140-148) |
| DLPDLRGPF   | (203-211) | TMLPNTRPHSY             | (136-146)           | SINGDKFQY | (161-169) |
| FVPNLKDMF   | (242-250) | MLPNTRPHSY              | (137-146)           | YTGAMTSKF | (169-177) |
| AVTMTAASY   | (253-261) | QLRCHLSY                | (150-157)           | TSKFLMGTY | (174-182) |
| TMFEVSVAF   | (290-298) | YVALSINGDKF             | (157-167)           | LTSAQSGDY | (216-224) |
| DLRWLAKSF   | (314-322) | FQYTGAMTSKF             | (167-177)           | YSLVIVTTF | (224-232) |
| HLTTEKQEY   | (366-374) | AMTSKFLMGTY             | (172-182)           | VIVTTFVHY | (227-235) |
| ALRLATVGY   | (375-383) | HVLSLVF                 | (192-198)           | TTFVHYANF | (238-246) |
| ALGTESGLF   | (467-475) | SLTSAQSGDY              | (215-224)           | MTAASYARY | (256-264) |
| AVSNAVDGF   | (505-513) | SLVIVTTF                | (225-232)           | DTETLTTF  | (284-292) |
| ALYEASTTY   | (564-572) | LVIVTTF                 | (226-232)           | ATVKGMQSY | (338-346) |
| RQIPKIQNF   | (597-605) | IVTTFVHY                | (228-235)           | ATSVLLSAY | (396-404) |
| ILSSNYFDF   | (643-651) | IVTTFVHYANF             | (228-238)           | SAYNRHPLF | (402-410) |
| TVMEIAGLY   | (666-674) | FVHYANFHNH              | (232-241)           | HTVMRETLF | (414-422) |
| HVVLAILLY   | (679-687) | FVHYANFHNFY             | (232-242)           | ESGLFSPCY | (471-479) |
| VVLAILLYF   | (680-688) | TMTAASY                 | (255-261)           | SPCYLSLRF | (476-484) |
| FLVHKIVMF   | (696-704) | TMTAASYARY              | (255-264)           | IIPLINVTF | (544-552) |
| LVHKIVMFF   | (697-705) | ELDTETLTTF              | (282-292)           | TTYLSSSLF | (570-578) |
|             |           | TMFEVSVAFF              | (290-399)           | NSILSSNYF | (641-649) |
|             |           | TVLKDIIGICY             | (326-326)           | AILLYFIAF | (683-691) |
|             |           | VLKDIIGICY              | (327-326)           | FIAFALGIF | (688-696) |
|             |           | TVKGMQSY                | (339-346)           |           |           |
|             |           | RLATVGY                 | (377-383)           |           |           |
|             |           | TVGYPKAGVY              | (380-389)           |           |           |
|             |           | LLSAYNRHPLF             | (400-410)           |           |           |
|             |           | PLHTVMRETLF             | (412-422)           |           |           |
|             |           | VMRETLF                 | (416-422)           |           |           |
|             |           | GLALGTESGLF             | (465-475)           |           |           |
|             |           | GLFSPCY                 | (473-479)           |           |           |
|             |           | LMIIPLINVTF             | (542-552)           |           |           |
|             |           | PLINVTF                 | (546-552)           |           |           |
|             |           | EVGRSALY                | (559-566)           |           |           |
|             |           | YLSSSLF                 | (572-578)           |           |           |
|             |           | TQKSCIF                 | (608-614)           |           |           |
|             |           | TQKSCIFCGF              | (608-617)           |           |           |
|             |           | GLETTTY                 | (627-633)           |           |           |
|             |           | VQNSILSSNY              | (639-648)           |           |           |
|             |           | VQNSILSSNYF             | (639-649)           |           |           |
|             |           | ILSSNYF                 | (643-649)           |           |           |
|             |           | VMEIAGLY                | (667-674)           |           |           |
|             |           | VVLAILLY                | (680-687)           |           |           |
|             |           | VVLAILLYF               | (680-688)           |           |           |
|             |           | VLAILLY                 | (681-687)           |           |           |
|             |           | VLAILLYF                | (681-688)           |           |           |
|             |           | VLAILLYFIAF             | (681-691)           |           |           |
|             |           | ILYFIAF                 | (685-691)           |           |           |
|             |           | FLVHKIVMFF              | (696-705)           |           |           |

**TABLE 16**

**TABLE 17**

| Primer name | Sequence 5'-3'                         | Locus | Cut site | Annealing site |
|-------------|--|-------|----------|----------------|
| PP5UTA      | GCGCTCTAGACCCAGACGCCGAGGATGGCC         | A     | XbaI     | 5UT            |
| 3PI4A       | GCCCTGACCCCTGCTAAAGGT                  | A     |          | Intron 4       |
| PP5UTB      | GCGCTCTAGACCAACCCGGACTCAGAAATCTCCT     | B     | XbaI     | 5UT            |
| 3PI4B       | TGCTTTCCCTGAGAAAGAGAT                  | B     |          | Intron 4       |
| 5UTB39      | AGGCGAATTCCAGAGTCTCCTCAGACGCG          | B*39  | EcoRI    | 5UT B39        |
| 5PKCE       | GGGCGAATTCCCGCCGCCACCATGCGGGTCATGGCGCC | C     | EcoRI    | 5UT            |
| 3PI4C       | TTCTGCTTTCTGAGAAAGAC                   | C     |          | Intron 4       |
| PP5UT       | GGGCGAATTCCGGACTCAGAAATCTCCCAGACGCCGAG | B     | EcoRI    | 5UT            |
| PP3PEI      | CCGCGAATTCTCATCTCAGGGTGAGGGCT          | A,B,C | EcoRI    | Exon 4         |
| PP3PEIH     | CCGCAAGCTTTTCATCTCAGGGTGAGGGCT         | A,B,C | HindIII  | Exon 4         |
| 3PEIHC7     | CCGCAAGCTTTTCAGCTCAGGGTGAGGGCT         | Cw*07 | HindIII  | Exon 4         |

| Primer Name | Sequence 5'-3'        |
|-------------|-----------------------|
| T7Prom      | TAATACGACTCACTATAGGG  |
| BGHrev      | TAGAAGGCACAGTCGAGG    |
| PPI2E2R     | GTCGTGACCTGCGCCCC     |
| PPI2E2F     | TTTCATTTTCAGTTTAGGCCA |
| ABCI3E4F    | GGTGTCTCTGTCCATTCTCA  |

5'CY5 Sequencing Primers

**TABLE 18**

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**TABLE 19**

| Sample | OD<br>260nm | OD<br>280nm | 260nm/280nm | Dilution<br>factor | Concentration ug/ml |
|--------|-------------|-------------|-------------|--------------------|---------------------|
| 3A394  | 0.0346      | 0.0202      | 1.7111      | 20                 | 34.5821             |

**TABLE 20**

| Sample        | OD<br>260nm | OD<br>280nm | 260nm/280nm | Dilution<br>factor | Concentration ug/ml |
|---------------|-------------|-------------|-------------|--------------------|---------------------|
| 3A394TPC<br>1 | 0.2821      | 0.1505      | 1.8739      | 20                 | 282.0960            |

**TABLE 21**

| Sample        | OD<br>260nm | OD<br>280nm | 260nm/280nm | Dilution<br>factor | Concentration ug/ml |
|---------------|-------------|-------------|-------------|--------------------|---------------------|
| 3A394TPC<br>1 | 0.6919      | 0.3625      | 1.9087      | 50                 | 1729.8492           |

**TABLE 22**

| Sample        | Decay time<br>milliseconds | # live cells/ml    | # dead<br>cells/ml | Viability % |
|---------------|----------------------------|--------------------|--------------------|-------------|
| 3A394TPC<br>1 | 19.8                       | $1.12 \times 10^6$ | $1.65 \times 10^5$ | 87.16       |



**TABLE 23**

| Sample                  | Optical<br>Density<br>492nm    | Dilution | Concentration of soluble<br>HLA ng/ml |
|-------------------------|--------------------------------|----------|---------------------------------------|
| 3A394TP<br>C1 well 1    | 1.278<br>1.388 (over<br>range) | 1.0      | 247.270                               |
| 3A394TP<br>C1<br>well 2 | 1.227<br>1.274                 | 1.0      | 229.855                               |
| 3A394TP<br>C1<br>well 3 | 1.021<br>1.042                 | 1.0      | 154.403                               |
| 3A394TP<br>C1<br>well 4 | 1.108<br>1.070                 | 1.0      | 169.001                               |

# TABLE 24

| Allele  | Allele Allele<br>AlleleConcentration by<br>ELISA ug/ml | Concentration by<br>ELISA ug/ml<br>Concentration by<br>ELISA ug/ml<br>Concentration by<br>ELISA ug/mlTotal<br>amount made mg |
|---|--|--|
| <b><u>Total amount<br/>made mg</u></b><br><b><u>Total amount<br/>made mg</u></b><br><b><u>Total amount<br/>made mg</u></b><br><b><u>Total amount<br/>made mg</u></b> HLA-<br>A*0301 | 545.4  | 3.47   |
| HLA-A*1102  | 888.5  | 2.57   |
| HLA-A*2902  | 476.8  | 2.58   |
| HLA-A*3002  | 50.3   | 3.38   |
| HLA-A*3201  | 1382.0   | 9.61   |
| HLA-A*3301  | 40.0   | 0.8  |
| HLA-B*0801  | 66.0   | 21.0   |
| HLA-B*1302  | 55.0   | 9.0  |
| HLA-B*1401  | 146.0  | 50.0   |
| HLA-B*1801  | 587.6  | 0.4  |
| HLA-B*3701  | 1831.0   | 119.0  |
| HLA-B*3801  | 128.0  | 66.0   |
| HLA-B*3905  | 1400.0   | 120.0  |
| HLA-B*40012   | 59.0   | 10.0   |
| HLA-B*4002  | 400.0  | 180.0  |
| HLA-B*4101  | 288.4  | 8.8  |
| HLA-B*4402  | 59.0   | 10.0   |

# TABLE A

| fraction | ion for MS/MS | derived peptide sequence |
|----------|---------------|--------------------------|
| 6        | 398.2 (+3)    | - - W D R H T X F        |
| 6        | 448.2 (+2)    | - - - - - Y T            |
| 7        | 382.7 (+2)    | V Q F E A A T            |
| 7        | 418.7 (+2)    | A Q F A S G A G Z        |
| 7        | 455.2 (+2)    | A L G A - - R G Y        |
| 7        | 489.1 (+2)    | - - V - - G H X Y        |
| 7        | 506.8 (+2)    | X S - - - C E Y          |
| 8        | 402.2 (+2)    | - G - - C D Y            |
| 8        | 419.2 (+2)    | G S H F G V A Y          |
| 8        | 433.8 (+2)    | A P P P P P P P P        |
| 8        | 455.2 (+2)    | - - - Z A R G Y          |
| 8        | 462.2 (+2)    | D P H A P P Z Y          |
| 8        | 507.2 (+2)    | A V P S X H X X Y        |
| 8        | 512.3 (+2)    | X A Z V Z M T A Y        |
| 8        | 512.8 (+2)    | A L N G R V T M Y        |
| 8        | 516.9 (+2)    | N Q Z H G S A E Y        |
| 8        | 522.9 (+2)    | F G X A C X A T S Y      |
| 8        | 642.7 (+2)    | P M N D W X M T Z T Y    |
| 9        | 331.4 (+3)    | A P M A R G Z Y          |
| 9        | 418.7 (+2)    | F V S N H A Y            |
| 9        | 426.2 (+3)    | - - - - - - - - S Y      |
| 9        | 433.3 (+2)    | N P P A Z Z P N          |
| 9        | 437.0 (+2)    | T G - - - - A Y          |
| 9        | 441.2 (+3)    | - Q - D P P P D M Z Y    |
| 9        | 446.6 (+2)    | G Q Z Z A V D F          |
| 9        | 453.6 (+2)    | X Q - - A G G Z Y        |
| 9        | 465.2 (+2)    | S Q F G G G S Q Y        |
| 9        | 476.2 (+2)    | S Q F D H V T Y          |
| 9        | 481.0 (+2)    | G Q H A S V X S Y        |
| 9        | 514.2 (+2)    | - - A A H V P P G Y      |
| 9        | 550.2 (+2)    | F M D V G A P T V Y      |
| 9        | 578.0 (+2)    | T P X G E P Y Z S Y      |
| 10       | 398.3 (+2)    | X A N - - V T            |
| 10       | 448.2 (+2)    | A Q A A P F A G Y        |
| 10       | 448.4 (+2)    | V V V F G V Z F          |
| 10       | 450.4 (+2)    | A Q M - - S E Y          |
| 10       | 456.8 (+2)    | C P L S C F T            |
| 10       | 464.7 (+2)    | - - - - F G H Y          |
| 10       | 473.7 (+2)    | A L W - - P Z F          |
| 10       | 486.4 (+2)    | V P H Z N A Y            |

# TABLE A CONT'D.

|    |            |                       |
|----|------------|-----------------------|
| 10 | 498.7 (+2) | - - - - - G H G G Y   |
| 10 | 509.0 (+2) | F L Z A M Z S T Y     |
| 10 | 527.7 (+2) | G Q Y V V Z P T Y     |
| 10 | 532.0 (+2) | T V X D S Z T H Y     |
| 10 | 540.2 (+2) | P M F D P P Z T F     |
| 11 | 469.2 (+2) | A Q A E S L R Y       |
| 11 | 480.6 (+2) | X A V G H S G G T Y   |
| 11 | 511.2 (+2) | - - - - - P T Y       |
| 11 | 516.7 (+2) | E S X P N N V P Y     |
| 12 | 383.0 (+3) | L A H T E C P R G Y   |
| 12 | 435.0 (+2) | - - - - - P S Y       |
| 12 | 473.2 (+2) | V Q G P V G V Q Y     |
| 12 | 475.0 (+2) | R G X G V A G T A F   |
| 12 | 505.0 (+2) | T G A P V S E E G Y   |
| 12 | 513.7 (+2) | V Q X Y Y G S V V     |
| 12 | 519.0 (+2) | E P A M V X Z C F     |
| 12 | 531.2 (+2) | G Q P G A P X G G Z Y |
| 12 | 541.0 (+2) | G P P H N G X R A Y   |
| 12 | 542.2 (+2) | A A H W H V E A Y     |
| 12 | 553.7 (+2) | T P P T R R E S Y     |
| 12 | 577.2 (+2) | F P T D R R S Q F     |
| 13 | 363.0 (+3) | Y T G V S Y X H F     |
| 13 | 447.0 (+2) | A Q A S A P D A Y     |
| 13 | 465.0 (+2) | V Q Y Y X P F         |
| 13 | 503.6 (+2) | G Q R K G A G S V F   |
| 13 | 553.2 (+2) | X Q Z X - - D V Y     |
| 13 | 590.8 (+2) | A T G T A Z N X N Z Y |
| 14 | 460.7 (+2) | V V A P I T T G Y     |
| 14 | 471.5 (+2) | V V A C V - - - Y     |
| 14 | 495.2 (+2) | X Q Y T V G Y F       |
| 14 | 525.3 (+2) | P L A - N - H T Y     |
| 14 | 541.3 (+2) | P L F G Q T A G Q Y   |
| 14 | 550.4 (+2) | A - - - - Q X E Y     |
| 14 | 577.2 (+2) | Z G Y G N P X N G A Y |
| 15 | 459.8 (+2) | V Q G P V G T D F     |
| 15 | 470.9 (+2) | V A G G W - - - F     |
| 15 | 514.2 (+2) | F Q A R X T E Y       |
| 15 | 536.6 (+2) | X A G F F X X E Y     |
| 15 | 544.2 (+2) | X Q - - - - Z Y       |
| 15 | 564.2 (+2) | S G A X D R A Y Z F   |
| 16 | 467.1 (+2) | F Q - - - - T X       |
| 16 | 500.4 (+2) | T P - - - A Z A F     |
| 16 | 501.0 (+2) | V V A T Z N Z Z X     |
| 16 | 503.6 (+2) | Y M V T - - - F       |
| 16 | 517.4 (+2) | A L G S Z A X M P F   |
| 16 | 521.3 (+2) | A P A V - - - V G Y   |
| 16 | 522.0 (+2) | V G Y V D D T Q F     |
| 16 | 525.6 (+2) | - - - - - T G F       |

**TABLE A**  
**CONT'D.**

|    |            |  |
|----|------------|--|
| 16 | 536.0 (+2) | P V P N V R X N Y                        |
| 16 | 544.4 (+2) | - - - - - T X S X                        |
| 16 | 557.6 (+2) | T L E G W M S Z Y                        |
| 16 | 561.5 (+2) | Y M V C N A E E Y                        |
| 16 | 596.7 (+2) | - - - - - X R D X Y                      |
| 16 | 596.9 (+2) | S L X - - - - F                          |
| 17 | 343.2 (+3) | A Q H P S <u>A</u> X R F                 |
| 17 | 351.3 (+3) | A A F C G - - - X V                      |
| 17 | 408.7 (+2) | Y L H - - E T                            |
| 17 | 441.2 (+2) | - - - - - Z A Y                          |
| 17 | 451.4 (+2) | I L G P P G S V Y                        |
| 17 | 455.0 (+2) | G L G Z T S A E F                        |
| 17 | 462.4 (+2) | X L G D V N M Y                          |
| 17 | 483.8 (+2) | V M <u>G</u> <u>X</u> T N A N F          |
| 17 | 490.2 (+2) | N A X G R E S S F                        |
| 17 | 497.2 (+2) | A M N P T N T V F                        |
| 17 | 507.0 (+2) | - - - - X V E F                          |
| 17 | 511.2 (+2) | X Q A P A X F V Y                        |
| 17 | 519.2 (+2) | T A R V X S V E Y                        |
| 17 | 526.8 (+2) | A L F - - - F T Y                        |
| 17 | 542.8 (+2) | X Q X N A Y X S Y                        |
| 17 | 563.2 (+2) | G L A R <u>C</u> <u>S</u> Z V E Y        |
| 18 | 503.8 (+2) | S Q X <u>A</u> <u>A</u> <u>G</u> V D V F |
| 18 | 511.7 (+2) | P Q G Z M A - - Y                        |
| 18 | 519.6 (+2) | - V F V S H T T F                        |
| 18 | 538.8 (+2) | H X T G N E A T S F                      |
| 18 | 565.7 (+2) | A E <u>F</u> <u>W</u> A C Z X Y          |
| 18 | 566.2 (+2) | Y M I D P S G V S Y                      |
| 18 | 581.2 (+2) | X Q G H H E M F Y                        |
| 20 | 448.2 (+2) | A A G X G P T F Y                        |
| 20 | 560.0 (+2) | X V E X T T D Y Y                        |
| 20 | 614.0 (+2) | I A V G Y V D D T Q F                    |
| 21 | 507.2 (+2) | V A <u>F</u> <u>V</u> <u>X</u> F V G Y   |
| 22 | 510.8 (+2) | <u>A</u> L M P - - X N Y                 |
| 22 | 557.2 (+2) | Y N R <u>W</u> S X E F                   |
| 24 | 546.3 (+2) | - - Z D R N V T F                        |
| 25 | 546.3 (+2) | V V T M - - - Z Y                        |

\* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

# TABLE B

| fraction | ion for MS/MS | derived peptide sequence |
|----------|---------------|--------------------------|
| 6        | 471.8 (+2)    | A Z V E C E T Y          |
| 7        | 418.7 (+2)    | A Q F A S G A G Z        |
| 7        | 504.2 (+2)    | Z G X G G G P A T S Y    |
| 8        | 402.2 (+2)    | - G - - C D Y            |
| 8        | 441.2 (+2)    | - - - - - Z S F          |
| 8        | 516.9 (+2)    | N Q Z H G S A E Y        |
| 9        | 331.4 (+3)    | A P M A R G Z Y          |
| 9        | 349.4 (+3)    | - - - - - G F Y          |
| 9        | 418.7 (+2)    | A Z V N S G - Y          |
| 9        | 426.2 (+3)    | A A S S Z V - - P P Z Y  |
| 9        | 433.3 (+2)    | N P P A Z Z P N          |
| 9        | 437.0 (+2)    | A C G G C G Z D Y        |
| 9        | 441.2 (+3)    | - Z - D P P P D M Z Y    |
| 9        | 446.6 (+2)    | G Q Z Z A V D F          |
| 9        | 578.0 (+2)    | T P X G E P Y Z S Y      |
| 10       | 426.5 (+2)    | G P - - - P Z Y          |
| 10       | 443.2 (+2)    | A P Z Y P P P P          |
| 10       | 448.3 (+2)    | G Z V C T P G S F        |
| 10       | 456.8 (+2)    | C P L S C F T            |
| 10       | 464.7 (+2)    | S Q F G G G S Q Y        |
| 10       | 465.4 (+2)    | A S G F N G S Z Y        |
| 10       | 503.8 (+2)    | - Z - - Y T A Y          |
| 10       | 508.7 (+2)    | G Z P P H N G F Y        |
| 10       | 517.0 (+2)    | I K A D H V S T Y        |
| 10       | 527.7 (+2)    | X Z A D H V X P Y        |
| 10       | 540.2 (+2)    | - - - - P G Z V Y        |
| 10       | 549.2 (+2)    | Z S V - - - Z T G Y      |
| 11       | 437.0 (+2)    | H X G N Q A A Y          |
| 11       | 511.4 (+2)    | Z A G T T V P V S Y      |
| 11       | 527.4 (+2)    | G Q Y P T Q P T Y        |
| 11       | 581.4 (+2)    | F A G S Z S N T S T Y    |
| 12       | 494.8 (+2)    | S Z G G - - - T G Y      |
| 12       | 526.8 (+2)    | Z G P P N Y X T Y        |
| 12       | 547.1 (+2)    | V K V I Q Q E S Y        |
| 13       | 454.6 (+2)    | L P P P P P P P          |
| 13       | 476.0 (+2)    | A K Y S T P A T L        |
| 13       | 503.6 (+2)    | G Q R K G A G S V F      |
| 13       | 513.1 (+2)    | R Z S A N H E A X        |
| 13       | 526.4 (+2)    | G K V R T D I T Y        |
| 13       | 553.2 (+2)    | V V X P A V R S T Y      |

**TABLE B**  
**CONT'D.**

|    |            |                                 |
|----|------------|---------------------------------|
| 13 | 561.0 (+2) | A K Y P H V E D Y               |
| 13 | 571.3 (+2) | A Z N X S A Y V X Y             |
| 13 | 601.2 (+2) | E V V G D T Z Y                 |
| 14 | 438.2 (+2) | A K A G I T T T L               |
| 14 | 490.8 (+2) | V - - T Z A G S A F             |
| 14 | 517.2 (+2) | A Z A A A N V X X Y             |
| 14 | 531.5 (+2) | A N H S V R D T Y               |
| 14 | 535.3 (+2) | E - - - G X R Z Y               |
| 14 | 552.8 (+2) | X Z H N D Z S T Y               |
| 14 | 577.2 (+2) | A N E Z X G - - - Y             |
| 15 | 497.3 (+2) | A A G P T A Z E S Y             |
| 15 | 514.2 (+2) | V A G X V F M Z Y               |
| 15 | 527.0 (+2) | A Z Y Z A Z V V F               |
| 15 | 564.2 (+2) | A Z F - - - Z X Y               |
| 15 | 577.2 (+2) | Z G Y G N P X N Z Y             |
| 15 | 626.0 (+2) | - - - - - Z A P C H Y           |
| 16 | 521.6 (+2) | A H A V Q R V V Y               |
| 16 | 525.6 (+2) | T Z X T V V X N Y               |
| 17 | 446.8 (+2) | A Z Z A S G X A F               |
| 17 | 492.8 (+2) | G S H S M R Y F                 |
| 17 | 503.8 (+2) | Y G Y G A T V E F               |
| 17 | 967.6 (+1) | V Z - - - T T F                 |
| 18 | 451.4 (+2) | Q P G P Q I V Y                 |
| 18 | 455.2 (+2) | N G Z X S N N Y                 |
| 18 | 475.2 (+2) | A N X V Z X E Y                 |
| 18 | 489.1 (+2) | G Z - - - Z G X X Y             |
| 18 | 497.8 (+2) | A M N P T N T V F               |
| 18 | 525.2 (+2) | Y N - - - Z X F                 |
| 18 | 538.8 (+2) | - M - - S Y Z N F               |
| 18 | 565.7 (+2) | A E <u>F</u> <u>W</u> A C Z X Y |
| 19 | 521.6 (+2) | S Z F G <u>C</u> <u>P</u> T R F |
| 19 | 524.6 (+2) | X G A X S N - - E F             |
| 19 | 571.2 (+2) | R Z A A Y R X T Y               |
| 19 | 646.2 (+2) | T N X H D G D G A T Z Y         |

\* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

# TABLE C

| fraction | ion for MS/MS | derived peptide sequence                      |
|----------|---------------|---|
| 6        | 398.2 (+3)    | - - W D R H T X F                             |
| 6        | 448.2 (+2)    | - - - - - Y T                                 |
| 8        | 419.2 (+2)    | G S H F G V A Y                               |
| 8        | 441.2 (+2)    | V P <u>C</u> <u>G</u> <u>Z</u> <u>Z</u> S Y   |
| 8        | 473.2 (+2)    | T A Z X H R G Y                               |
| 8        | 512.8 (+2)    | X A Z Y E H T Y                               |
| 8        | 516.9 (+2)    | N Q Z H G S A E Y                             |
| 8        | 546.8 (+2)    | N G <u>X</u> <u>A</u> <u>M</u> <u>H</u> W T Y |
| 9        | 418.7 (+2)    | F V S N H A Y                                 |
| 9        | 437.0 (+2)    | T G - - - - A Y                               |
| 9        | 465.2 (+2)    | S Q F G G G S Q Y                             |
| 9        | 476.2 (+2)    | S Q F D H V T Y                               |
| 9        | 481.0 (+2)    | - P - - G Z D E V                             |
| 9        | 514.2 (+2)    | N G Y D G P N A G Y                           |
| 9        | 578.0 (+2)    | T P X G E P Y Z S Y                           |
| 10       | 398.3 (+2)    | X A N - - V T                                 |
| 10       | 448.3 (+2)    | M P H S G Y G F                               |
| 10       | 450.4 (+2)    | V D X - - - Y                                 |
| 10       | 456.8 (+2)    | C P L S C F T                                 |
| 10       | 464.7 (+2)    | - - - - - P G F Y                             |
| 10       | 486.2 (+2)    | - A - P H P M G Y                             |
| 10       | 494.2 (+2)    | A Q T V G Y G E Y                             |
| 10       | 508.7 (+2)    | - - - - - S V Y                               |
| 10       | 509.0 (+2)    | F L Z A M Z S T Y                             |
| 10       | 532.0 (+2)    | T V X D S Z T H Y                             |
| 11       | 444.1 (+2)    | T P - - A R A P T                             |
| 11       | 469.2 (+2)    | S E H D R M Y                                 |
| 11       | 480.6 (+2)    | T G N C S G T G T Y                           |
| 11       | 496.8 (+2)    | A Q V N P S X T Y                             |
| 11       | 532.3 (+2)    | S P G A E T R A X Y                           |
| 12       | 473.2 (+2)    | Y L G - - - G A F                             |
| 12       | 494.8 (+2)    | X T S F M Z V Y                               |
| 12       | 499.0 (+2)    | - P - - - P S S G Y                           |
| 12       | 505.0 (+2)    | T P - - - G R M Y                             |
| 12       | 513.7 (+2)    | P M F D Z Z V Y                               |
| 12       | 519.0 (+2)    | Y L - - - R T F                               |
| 12       | 531.2 (+2)    | A Q E H G C A A Z F                           |
| 12       | 542.2 (+2)    | - <u>M</u> - - - <u>G</u> <u>V</u> H D Y      |
| 12       | 550.2 (+2)    | Y V S - - R N Q Y                             |
| 12       | 553.7 (+2)    | A Q Y A A G E S F Y                           |



# TABLE C CONT'D.

|    |            |                       |
|----|------------|-----------------------|
| 12 | 564.0 (+2) | T P H T Z H D E Y     |
| 12 | 565.2 (+2) | Y M - - - F M Y       |
| 13 | 396.1 (+3) | D P H Y V S G H Z F   |
| 13 | 401.2 (+2) | M V G X X P A T       |
| 13 | 526.4 (+2) | Z A S P G E X T S Y   |
| 14 | 460.7 (+2) | V V A P I T T G Y     |
| 14 | 471.5 (+2) | V V A C V - - - Y     |
| 14 | 525.3 (+2) | P L A - N - H T Y     |
| 14 | 543.2 (+2) | X A X Y R R M Y       |
| 14 | 550.4 (+2) | P L A M Z X Y T Y     |
| 15 | 460.6 (+2) | - P - M P G X A Y     |
| 15 | 461.0 (+2) | H T T S Z N A Y       |
| 15 | 506.0 (+2) | M A A M V G V A V Y   |
| 15 | 508.4 (+2) | G P Z V M Z H G Y     |
| 15 | 514.2 (+2) | F Q A R X T E Y       |
| 15 | 520.0 (+2) | L P H Q P L A T Y     |
| 15 | 525.2 (+2) | A A A X V - - - V T Y |
| 15 | 536.6 (+2) | X P E M G Z F S Y     |
| 15 | 544.2 (+2) | Y V - - V R - V F     |
| 15 | 564.2 (+2) | F V T X N X E E Y     |
| 16 | 489.0 (+2) | A A P V G A X E S Y   |
| 16 | 500.4 (+2) | G S - - - S Y T Y     |
| 16 | 522.0 (+2) | V G Y V D D T Q F     |
| 16 | 525.7 (+2) | Y V A - - - P A F     |
| 16 | 533.0 (+2) | V G Y - - A H P G F   |
| 16 | 535.7 (+2) | Z A T N S V T S T Y   |
| 16 | 537.0 (+2) | - - - - - S T Y       |
| 16 | 545.8 (+2) | Y A T A G E M M A F   |
| 16 | 547.0 (+2) | S P T Y T H A V A F   |
| 16 | 557.0 (+2) | M P A - - M V M A F   |
| 17 | 351.3 (+3) | A A F C G - - - X V   |
| 17 | 393.7 (+2) | S P N E D X M Z V F   |
| 17 | 403.2 (+2) | V A A T A G A V F     |
| 17 | 408.7 (+2) | Y L H - - E T         |
| 17 | 414.8 (+2) | T A F P F V F         |
| 17 | 451.4 (+2) | I L G P P G S V Y     |
| 17 | 462.4 (+2) | X L G D V N M Y       |
| 17 | 476.2 (+2) | Y G - - - V X S M     |
| 17 | 490.8 (+2) | X P H C S C S S F     |
| 17 | 504.0 (+2) | D P P C W G V S F     |
| 17 | 507.0 (+2) | - - - - X V E F       |
| 17 | 511.2 (+2) | - - - - A H D A Y     |
| 17 | 519.2 (+2) | T A R V X S V E Y     |
| 17 | 526.8 (+2) | X S D G R Z X T Y     |
| 17 | 542.8 (+2) | N M N D L V S E Y     |
| 17 | 557.2 (+2) | M P A A D Y E V A F   |
| 18 | 474.8 (+2) | A E I L Q V I Y       |
| 18 | 503.8 (+2) | A P - - - X V S Y     |

# TABLE C CONT'D.

|    |            |  |
|----|------------|--|
| 18 | 514.7 (+2) | M P A G Y N N V Y  |
| 18 | 519.6 (+2) | Y M S G <u>X</u> <u>Y</u> G T F                            |
| 18 | 526.8 (+2) | - - - <u>A</u> <u>V</u> V A Z S Y                          |
| 18 | 538.8 (+2) | X P V V P A A Z T Y  |
| 18 | 566.2 (+2) | Y M I D P S G V S Y  |
| 18 | 616.3 (+2) | F A N G V <u>Z</u> <u>G</u> <u>C</u> <u>A</u> <u>F</u> A F |

\* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

# TABLE D

| fraction | ion for MS/MS | derived peptide sequence |
|----------|---------------|--------------------------|
| 6        | 493.0 (+2)    | N H A V G - - V S M      |
| 6        | 557.8 (+2)    | H N V F Z P T S N A      |
| 7        | 434.8 (+2)    | S V C E T E S X          |
| 7        | 481.3 (+2)    | T H P S Z A C A F        |
| 7        | 489.1 (+2)    | - H - - S P X X          |
| 8        | 420.1 (+2)    | A N X E G P H T          |
| 8        | 441.7 (+2)    | G H S P P T S S L        |
| 8        | 494.8 (+2)    | C H S A F A L            |
| 8        | 511.6 (+2)    | H H A F A Z V X V        |
| 8        | 519.4 (+2)    | D H Y Y X A G S X        |
| 9        | 411.4 (+2)    | E X A P H A A X          |
| 9        | 424.3 (+2)    | A A A X R C E X          |
| 9        | 426.1 (+2)    | G H Z A P A A S X        |
| 9        | 441.7 (+2)    | V H N P Z S S X          |
| 9        | 444.2 (+2)    | A G G P T X C R X        |
| 9        | 455.5 (+2)    | L H L L T L E A          |
| 9        | 490.3 (+2)    | A G G Z P A T P P A X    |
| 9        | 513.1 (+2)    | S H Z G C V Z P A V      |
| 9        | 520.0 (+2)    | X H R L C S P T X        |
| 10       | 404.2 (+2)    | S V S X P H A P          |
| 10       | 417.1 (+2)    | A P F T G G N G X        |
| 10       | 433.8 (+2)    | G H D P D S P A A        |
| 10       | 446.2 (+2)    | E H G X E N G H          |
| 10       | 455.4 (+2)    | E H V A S S P A L        |
| 10       | 460.4 (+2)    | H H A P C G V S X        |
| 10       | 464.0 (+2)    | N H A I V S T S V        |
| 10       | 464.7 (+2)    | G H Z N S V T S V        |
| 10       | 465.3 (+2)    | S H Z A P C T S V        |
| 10       | 469.4 (+2)    | F V A R F V S X          |
| 10       | 469.6 (+2)    | H H S D G S V S L        |
| 10       | 473.7 (+2)    | S H A G A P P P T X      |
| 10       | 482.6 (+2)    | M C Z - G M P A X        |
| 10       | 482.8 (+2)    | G H G A N N D P A X      |
| 10       | 495.7 (+2)    | X H S Z P A G P A X      |
| 10       | 508.3 (+2)    | X H V V S - - V X        |
| 10       | 511.2 (+2)    | A V X D C C Z V A V      |
| 10       | 522.3 (+2)    | E X G G N T N P Z X      |
| 10       | 522.7 (+2)    | Y H G S Z N P E X        |
| 10       | 569.6 (+2)    | - - - - - T Y S Y        |
| 10       | 574.3 (+2)    | - - - - - - - M          |

# TABLE D

## CONT'D.

|    |            |   |
|----|------------|---|
| 11 | 405.7 (+2) | S H - - - Y F                                 |
| 11 | 425.8 (+2) | A H P D Z A X V                               |
| 11 | 444.7 (+2) | G T A H Y Z V X                               |
| 11 | 448.9 (+2) | M H A D N P V X                               |
| 11 | 455.7 (+2) | S H <u>V</u> <u>D</u> <u>R</u> P S X          |
| 11 | 459.7 (+2) | T G A A F Z N P X                             |
| 11 | 482.8 (+2) | G H <u>C</u> <u>P</u> R N P A X               |
| 11 | 495.7 (+2) | X H S G A P Z A P X                           |
| 11 | 516.7 (+2) | X H D <u>T</u> <u>E</u> <u>H</u> <u>A</u> P X |
| 11 | 562.3 (+2) | - - - Y Z A Y V Y                             |
| 12 | 411.7 (+2) | G H G P T X A A V                             |
| 12 | 428.8 (+2) | V P - - - - -                                 |
| 12 | 444.7 (+2) | Y Q H T G A V L                               |
| 12 | 448.4 (+2) | T Q A P G N P V L                             |
| 12 | 460.3 (+2) | T Z A <u>G</u> <u>C</u> <u>M</u> <u>V</u> P X |
| 12 | 490.9 (+2) | T H T Q P G V Q L                             |
| 12 | 507.4 (+2) | G H A G H V P P E X                           |
| 12 | 511.6 (+2) | T H F R Y V S X                               |
| 12 | 528.1 (+2) | E H R P D R V F                               |
| 13 | 427.6 (+2) | S H A Q T V V L                               |
| 13 | 449.2 (+2) | S H A N S A V V L                             |
| 13 | 464.8 (+2) | M V - - H P V X                               |
| 13 | 487.6 (+2) | Y H H G G V S A F                             |
| 13 | 506.2 (+2) | - H - - G H T G Y X                           |
| 14 | 420.1 (+2) | N H A N G L T L                               |
| 14 | 438.7 (+2) | - - - - - P X X                               |
| 14 | 456.7 (+2) | A H S V P S P A F                             |
| 14 | 477.7 (+2) | M H T - - P A P V                             |
| 14 | 482.8 (+2) | P G A A V V P S X                             |
| 14 | 560.8 (+2) | G H A G M G C V F Z X                         |
| 14 | 592.3 (+2) | M R - - - - G X E X                           |
| 15 | 418.9 (+2) | S H G V P R A X                               |
| 15 | 439.0 (+2) | E H H M P X X                                 |
| 15 | 454.3 (+2) | H H Z C A A G A X                             |
| 15 | 492.1 (+2) | X V D <u>Z</u> A <u>E</u> P X V               |
| 15 | 510.1 (+2) | I H T P E N P V I                             |
| 15 | 520.0 (+2) | M G X P V R H M V                             |
| 15 | 524.2 (+2) | S H Y D W Z V X                               |
| 15 | 532.9 (+2) | M P H S H P F V X                             |
| 15 | 577.2 (+2) | Z C V R C Z N G V F                           |
| 16 | 412.9 (+2) | S H A G A G X V X                             |
| 16 | 418.3 (+2) | G H X E G P X X                               |
| 16 | 424.3 (+2) | X H G G D H V X                               |
| 16 | 448.6 (+2) | E Z A H S X V X                               |
| 16 | 448.9 (+2) | Y H H D X V X                                 |
| 16 | 454.3 (+2) | M A G A W C R X                               |
| 16 | 456.7 (+2) | S H <u>D</u> <u>G</u> <u>S</u> V P T X        |
| 16 | 464.2 (+2) | F H - - X X X                                 |

# TABLE D CONT'D.

|    |            |   |
|----|------------|---|
| 16 | 469.9 (+2) | E H - - - T V X                                 |
| 16 | 472.3 (+2) | M A X - - - V V                                 |
| 16 | 499.0 (+2) | G H A <u>X</u> <u>T</u> D G X T X               |
| 16 | 504.1 (+2) | P V <u>S</u> <u>H</u> <u>X</u> V N E L          |
| 16 | 507.7 (+2) | X X Y <u>T</u> <u>P</u> <u>G</u> H T X          |
| 16 | 522.7 (+2) | - - - - - P V X                                 |
| 16 | 523.3 (+2) | M A H S - - P V F                               |
| 16 | 529.9 (+2) | X H Y D R N Q X                                 |
| 16 | 536.2 (+2) | E A - - C Z V T T Y                             |
| 16 | 547.9 (+2) | - - - - - A X S V                               |
| 16 | 552.4 (+2) | X Z <u>A</u> <u>P</u> <u>T</u> S V F Z X        |
| 17 | 367.7 (+3) | <u>F</u> <u>T</u> <u>M</u> <u>P</u> A H P S T X |
| 17 | 490.8 (+2) | M T X G Y G E P X                               |
| 17 | 557.3 (+2) | A H G R K M S K S L                             |
| 17 | 340.7 (+3) | - <u>H</u> - - H A Z V X                        |
| 17 | 367.7 (+3) | - - - - R X S H X                               |
| 17 | 419.8 (+2) | - - - H A V G X X                               |
| 17 | 462.8 (+2) | M S S N E X X M                                 |
| 17 | 476.2 (+2) | G H - - - P C C                                 |
| 17 | 504.2 (+2) | X H V X A V N E X                               |
| 17 | 523.2 (+2) | - H - - - - P V F                               |
| 17 | 543.2 (+2) | X H E V Z P H X X                               |
| 17 | 590.2 (+2) | A T E H <u>C</u> <u>F</u> <u>V</u> M E X        |
| 18 | 456.4 (+2) | A H S N L A S V L                               |
| 18 | 463.3 (+2) | V X A P A N D X X                               |
| 18 | 474.8 (+2) | M X <u>G</u> <u>X</u> S F P A X                 |
| 18 | 491.2 (+2) | V H T C V N P V X                               |
| 18 | 497.8 (+2) | S H Q R Q L L L                                 |
| 18 | 515.8 (+2) | E W <u>H</u> <u>Y</u> P V S X                   |
| 18 | 519.7 (+2) | <u>F</u> H <u>M</u> <u>D</u> X Z T F            |
| 18 | 543.4 (+2) | X H E <u>V</u> <u>Z</u> P H X X                 |
| 18 | 596.8 (+2) | <u>F</u> <u>H</u> <u>H</u> <u>T</u> Z S N P X X |
| 19 | 434.6 (+2) | - H <u>G</u> <u>C</u> <u>P</u> G M P X          |
| 19 | 496.6 (+2) | <u>E</u> <u>T</u> <u>P</u> <u>E</u> H A P V X   |
| 19 | 539.6 (+2) | <u>M</u> <u>X</u> P G N S A X Y X               |

\* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.

# TABLE E

| fraction | ion for MS/MS | derived peptide sequence                 |
|----------|---------------|--|
| 7        | 504.1 (+2)    | H M S G Z P T S Y                        |
| 7        | 549.2 (+2)    | H N Z A A H Z E Y                        |
| 8        | 517.0 (+2)    | N Q Z H G S A E Y                        |
| 8        | 526.0 (+2)    | H A A <u>X</u> <u>Y</u> <u>S</u> Z V Y   |
| 8        | 642.7 (+2)    | P M N D W X M T Z T Y                    |
| 10       | 465.3 (+2)    | S Q F G G G S Q Y                        |
| 10       | 484.3 (+2)    | Y Q S <u>D</u> <u>H</u> R Y              |
| 10       | 509.0 (+2)    | F L Z A M Z S T Y                        |
| 10       | 532.0 (+2)    | T V X D S Z T H Y                        |
| 11       | 424.3 (+2)    | H X S T Z D F                            |
| 11       | 464.3 (+2)    | H A P P T D P P P                        |
| 11       | 550.0 (+2)    | H G P A N <u>R</u> <u>D</u> <u>S</u> V F |
| 11       | 563.3 (+2)    | F P Y P T D P Z Y                        |
| 12       | 531.2 (+2)    | K N A N L V Q L Y                        |
| 14       | 585.6 (+2)    | R S F X X E N E Y                        |
| 16       | 488.7 (+2)    | H M Z N P T S Y                          |
| 16       | 661.9 (+2)    | Y V X F - - - V Y                        |
| 17       | 577.6 (+2)    | R S M X <u>R</u> <u>C</u> <u>P</u> E Y   |
| 18       | 451.1 (+2)    | I L G P P G S V Y                        |
| 18       | 523.0 (+2)    | - - <u>E</u> <u>V</u> <u>T</u> A Z T Y   |
| 19       | 565.6 (+2)    | Y M I D P S G V S Y                      |
| 19       | 503.8 (+2)    | S Q X A A G V D V F                      |
| 20       | 560.0 (+2)    | X V E X T T D Y Y                        |
| 20       | 582.4 (+2)    | M Y N <u>C</u> <u>N</u> E X D Y          |
| 21       | 448.2 (+2)    | A A G X G P T F Y                        |
| 21       | 614.0 (+2)    | I A V G Y V D D T Q F                    |
| 22       | 507.2 (+2)    | V A <u>E</u> <u>V</u> <u>X</u> F V G Y   |
| 22       | 557.2 (+2)    | Y N <u>R</u> <u>W</u> S X E F            |
| 23       | 510.8 (+2)    | <u>A</u> <u>L</u> M P - - X N Y          |
| 25       | 562.8 (+2)    | N Q F Q A L L Q Y                        |

\* Dashes represent positions at which amino acids could not be unambiguously assigned through NanoES-MS/MS fragmentation patterns and/or Edman data obtained. Underlined residues designate tentative assignments.